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CEO Approval (CEO) entry – Medium Sized Project – GEF - 7

## Strengthening the national greenhouse gas inventory of the Republic of Mauritius to improve climate reporting and transparency

### Part I: Project Information

GEF ID

10260

Project Type

MSP

Type of Trust Fund

GET

CBIT/NGI

☒ CBIT

☐ NGI

Project Title

Strengthening the national greenhouse gas inventory of the Republic of Mauritius to improve climate reporting and transparency

Countries

Mauritius

Agency(ies)

UNDP

**Other Executing Partner(s)**

Ministry of Environment, Solid Waste Management and Climate Change (MoESWMCC)

**Executing Partner Type**

Government

**GEF Focal Area**

Climate Change

**Taxonomy**

Influencing models, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Stakeholders, Beneficiaries, Communications, Education, Type of Engagement, Participation, Information Dissemination, Civil Society, Academia, Non-Governmental Organization, Capacity, Knowledge and Research, Enabling Activities, Knowledge Generation, Knowledge Exchange, Learning, Capacity Development, Focal Areas, Climate Change, Climate Change Mitigation, Climate Change Adaptation, United Nations Framework Convention on Climate Change, Capacity Building Initiative for Transparency, Nationally Determined Contribution, Gender Equality, Gender Mainstreaming, Gender-sensitive indicators, Sex-disaggregated indicators, Gender results areas, Participation and leadership, Workshop, Training

**Rio Markers****Climate Change Mitigation**

Climate Change Mitigation 2

**Climate Change Adaptation**

Climate Change Adaptation 1

**Submission Date**

3/25/2021

**Expected Implementation Start**

5/15/2021

**Expected Completion Date**

5/15/2025

**Duration**

48In Months

Agency Fee(\$)

120,636.00

## A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCM-3-8	Climate Change	GET	1,269,850.00	798,500.00
			<b>Total Project Cost(\$)</b> 1,269,850.00	<b>798,500.00</b>



## B. Project description summary

### Project Objective

To assist the Republic of Mauritius in strengthening its national greenhouse gas inventory and associated data collection process, and to mainstream greater use of the inventory in policy formulation and NDC tracking

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
1. Improving the accuracy and localisation of the national greenhouse gas inventory	Technical Assistance	1.1 Key Category sectors benefit from locally-calibrated emission factors and/or activity data, enabling the inventory to advance to Tier 2 or Tier 3 GHG estimation approaches	<p>1.1 Development of Tier 2 emission factors for key fuels: coal, heavy fuel oil, gasoline, diesel, kerosene and liquified petroleum gas – for application in Energy Industries, Transport, Manufacturing Industry and Construction, and Energy Other Sectors</p> <p>1.2 Development of Tier 3 emission factors for Mauritius's 8 thermal power plants and a real-time grid emission factor – for application in Energy Industries and (increasingly) Transport</p> <p>1.3 Development of Tier 2 activity data for Mauritius's land transport sector (road, Metro), augmented by</p>	GET	910,000.00	578,500.00

gender and socio-  
economic usage data

1.4 Development of  
Tier 2 enteric  
fermentation  
emission factors and  
model for livestock

1.5 Development of  
Tier 2 allometric  
equations, root-to-  
shoot ratios and  
carbon densities for 4  
key tree species in the  
Mauritian context

1.6 Ground-truthed  
forest inventory of  
privately-held  
forestland and non-  
forest tree cover (e.g.  
along river banks and  
roadsides)

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2. Strengthening the national greenhouse gas inventory process	Technical Assistance	2.1 Reduced burden (time, cost) on institutions supplying data to the national greenhouse gas inventory	2.1 Implemented government roadmap for a permanent MRV structure, including firm government financing and institutional commitments  2.2 Development of an IT-based system to simplify and streamline the inventory data collection process	GET	134,600.00	70,000.00
3. Mainstreaming the national greenhouse gas inventory to enhance transparency	Technical Assistance	3.1 Enhanced policy-relevance of the national greenhouse gas inventory, transitioning from a periodic UNFCCC obligation to a useful policy tool	3.1 Targeted training on the use of the new IT-based system and on the use of the inventory for policy formulation, target-setting, scenario analysis and MRV of NDC commitments  3.2 Enhancing the role of the Climate Change Information Centre (CCIC) as a transparency portal	GET	80,000.00	80,000.00
4: Knowledge Management and Monitoring and evaluation	Technical Assistance			GET	40,400.00	
Sub Total (\$)					1,165,000.00	728,500.00

**Project Management Cost (PMC)**

GET	104,850.00	70,000.00
<b>Sub Total(\$)</b>	<b>104,850.00</b>	<b>70,000.00</b>
<b>Total Project Cost(\$)</b>	<b>1,269,850.00</b>	<b>798,500.00</b>

**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(\$)
Donor Agency	Agence Francaise de Developement	In-kind	Recurrent expenditures	30,000.00
Recipient Country Government	Ministry of Environment, Solid Waste Management and Climate Change (MoESWMCC)	In-kind	Recurrent expenditures	240,000.00
Recipient Country Government	Central Electricity board	In-kind	Recurrent expenditures	100,000.00
Recipient Country Government	Food and Agricultural Research and Extension Institute (FAREI)	In-kind	Recurrent expenditures	80,500.00
Recipient Country Government	Forestry service, Ministry of Agro-Industry and food security	In-kind	Recurrent expenditures	50,000.00
Recipient Country Government	Mauritius Renewable Energy Agency (MARENA)	In-kind	Recurrent expenditures	75,000.00
Recipient Country Government	Ministry of Energy and Public Utilities	In-kind	Recurrent expenditures	68,000.00
Recipient Country Government	National and Land Transport Authority (NTL)	In-kind	Recurrent expenditures	100,000.00
GEF Agency	UNDP	In-kind	Recurrent expenditures	20,000.00
Private Sector	Private Sector - Omnicane)	In-kind	Recurrent expenditures	30,000.00
Other	University of Mauritius	In-kind	Recurrent expenditures	5,000.00
<b>Total Co-Financing(\$)</b>				<b>798,500.00</b>

**Describe how any "Investment Mobilized" was identified**

N/A

## 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(\$)
UNDP	GET	Mauritius	Climate Change	CBIT Set-Aside	1,269,850	120,636
Total Grant Resources(\$)					1,269,850.00	120,636.00

**E. Non Grant Instrument**

**NON-GRANT INSTRUMENT at CEO Endorsement**

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Includes Non grant instruments? **No**

Includes reflow to GEF? **No**



## F. Project Preparation Grant (PPG)

PPG Required



PPG Amount (\$)

50,000

PPG Agency Fee (\$)

4,750

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
UNDP	GET	Mauritius	Climate Change	CBIT Set-Aside	50,000	4,750
Total Project Costs(\$)					50,000.00	4,750.00

## Core Indicators

## 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	48	60		
Male	72	60		
Total	120	120	0	0

## Part II. Project Justification

### 1a. Project Description

The project is still aligned with the project design proposed in PIF, and total financing. Changes in the approach and activities can be summarized as follows:

1. Component 4 has now been added as a stand-alone component for M&E activities in order to simplify project management and emphasize these activities.
2. The activities within each output of the CBIT project have been further elaborated based on the feedback provided by stakeholders during the PPG phase.
3. Capacity Building has been added in all outputs of component 1, to align the project with CBIT objectives and to ensure the sustainability and replicability of the methodological improvements that will be addressed in the project.
4. Indicator 1. Direct project beneficiaries disaggregated by sex has changed since the PIF, from 120 beneficiaries, whom 48 are women to 120 direct beneficiaries, of whom at least 60 are women.
5. **The budget of component 2 has been reduced from 175,000 to 134,600. This budget has been reallocated to component 4 on knowledge management and monitoring and evaluation.**

**1a. Project Description.** Elaborate on: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description); 2) the baseline scenario and any associated baseline projects; 3) the proposed alternative scenario with a brief description of expected outcomes and components of the project; 4) alignment with GEF focal area and/or Impact Program strategies; 5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing; 6) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 7) innovativeness, sustainability and potential for scaling up.

#### 1.a.1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

The global environmental and/or adaptation problems, root causes and barriers that need to be addressed have remained consistent with those in the PIF. The stakeholder consultation conducted during the project preparation period re-affirmed the barriers identified in the PIF. The following provides a description on the global environmental and/or adaptation problems, root causes and barriers, which is further detailed in section II of the of the accompanying project document.

The Republic of Mauritius is a small island developing state (SIDS) off the south-east coast of the African continent in the south-west Indian Ocean, approximately 900 km east of Madagascar. In 2013, the latest year for which official data are available, net greenhouse gas (GHG) emissions for Mauritius, including the Agriculture, Forestry and Other Land Use (AFOLU) sector, were estimated to be 4.8 MtCO<sub>2</sub>e – a near-doubling since 2000.

Mauritius has recently completed its Third National Communication to the UNFCCC (TNC, 2016), is currently undertaking its first Biennial Update Report (BUR-1) and plans to commence work on its Fourth National Communication (FNC) in 2020. An updated Nationally Determined Contribution (NDC-2) will be submitted in 2021. The UNEP-GEF project, 'NAMAs for low-carbon island development strategy', which is currently under implementation, intends to (i) strengthen national capability to identify, prioritise and develop mitigation actions to meet NDC targets; (ii) initiate implementation actions on renewable Energy targets; and (iii) set up an MRV framework to track and transparently report on NDC implementation for renewable energy actions. The country also has a large portfolio of GEF and GCF projects under implementation, addressing areas such as renewable energy, energy efficiency, sustainable transport and land use, land use change and forestry (LULUCF).

Under its NDC, Mauritius is targeting a 30% reduction in GHG emissions by 2030. Thirteen project options have been identified for adaptation and 10 for mitigation. The financial resource requirements are estimated at USD 5.5 billion, with USD 4 billion allocated for adaptation and the remaining USD 1.5 billion for mitigation activities during the period 2015-2030.

According to the latest GHG emission inventory, submitted along the Third National Communication, the electricity sector and the transport sector together account for two-thirds of Mauritius's greenhouse gas emissions in year 2013 (46.5% and 19.6% of national total GHG emissions without LULUCF, respectively). Both sectors are undergoing rapid, transformational and inter-related change that will significantly alter their emissions profiles.

Electricity demand is increasing rapidly, from a 462 MW to 468 in 2018, and will reach more than 600 MW in 2030. Average annual growth in GHG emissions from the electricity sector since 2000 has been 4.3%. The Mauritian grid is emissions-intense, reliant upon coal (39%) and heavy fuel oil (38%) for the majority of power generation: the grid emission factor is officially 1.01 tCO<sub>2</sub>/MWh, but this is subject to uncertainty (see below). The grid is also 'greening' rapidly, with 18% renewable energy penetration today (mainly bagasse) and a target of at least 35% by 2025, as described in the electricity demand forecasts of the Renewable Energy Roadmap 2030 for the electricity sector<sup>6</sup>. According to this roadmap, over 100 MW of new renewable energy – mainly wind and solar – are already under development in 2019-2020 alone. Large-scale energy efficiency efforts are being directed at the manufacturing sector. These trends will interact in complex ways, changing not just the amount of fossil fuel that is used but also the diurnal and seasonal use of different sources of energy.

Meanwhile, the transport sector is also growing rapidly (at the end of 2019 there were 568,879 registered vehicles on the road, up from 556,001 in 2018 and 366,520 in 2009) and is benefitting from a programme of large infrastructure investment (fly-overs, road expansions, etc.). The government is considering blending bio-ethanol, sourced from the country's large sugar industry, with gasoline to reduce emissions. The light-rail Metro Express started its commercial operations on 10 January 2020, and will transform commuting patterns from rural towns into the capital city of Port Louis. The railway will start in Curepipe and travel through Vacoas, Phoenix, Quatre Bornes, Rose-Hill, Beau Bassin to ultimately end in Port Louis. Currently, only phase 1 (13 km) is completed, serving Rose Hill, Beau Basin and Port Louis, with phase 2 (13 km) due to be completed in 2021. As Mauritius's only railway, it will displace road transport, both conventional buses and private vehicles, in yet-to-be-seen ways. As an electric system drawing power from the grid (initially 11 MW for Phase 1 of the rail system), it is one manifestation of a nascent electrification revolution in the transport sector, accompanied by a tripling – to 10,000 – of the number of hybrid (electric-petrol) cars in the past three years in Mauritius and ambitious government plans to electrify the bus fleet. One of these plans is to use electric shuttle buses as a feeder to transfer commuters to and from the metro stations, which will be implemented in a GEF-7 electric mobility project which was approved in December 2019.

It is vital that these fundamental changes to the two largest greenhouse gas-emitting sub-sectors are accurately captured in the national greenhouse gas inventory. Unfortunately, the current inventory suffers from some deficiencies in this respect. Table 1 summarises the inventory improvements needed for specific sectors and sub-sectors, as identified by the National Greenhouse Gas Inventory Report (2017) and the Third National Communication (2016). These include:

Fossil fuels account for almost half of national GHG emissions, are almost all imported (thus amenable to testing), and the electricity sector of Mauritius is very concentrated with just 8 power plants utilizing fossil fuels. Nevertheless, emissions from the Energy Industries sub-sector are estimated using an IPCC Tier 1 approach. As the Inventory Report notes (page 54) states, “It would be useful for the carbon content of fuels to be tested, so that country-specific carbon emission factors could be used rather than default ones from the 2006 IPCC guidelines.” Such nationally-calibrated emission factors would also have application in other sub-sectors that consume fossil fuels – notably, the Manufacturing Industry and Construction sub-sector, where fuel oil is widely used in boilers, and in the Transport sub-sector, where gasoline and diesel are used in vehicles.

With regard to the Transport sub-sector, the National Land Transport Authority (NLTA) maintains a digital vehicle database that contains information on types of vehicles (including light-duty and heavy-duty split into fuel-types), the age of vehicles, and the use of catalyst and fuel-injection technology. However, activity data – kilometres travelled – is scant and largely derived from the country’s bus fleet rather than private vehicles. Furthermore, the lack of nationally-calibrated fuel emission factors (EFs) means that the current GHG inventories of Transport is necessarily restricted to a Tier 1 approach.

As Table 1 indicates, other sectors and sub-sectors would also benefit from improvements to the national greenhouse gas inventory. However, many such improvements would improve the accuracy of the inventory only marginally. Iron and Steel Production, for example, forms a prominent component of the Industrial Processes and Product Use (IPPU) sector and is currently analysed using a Tier 1 approach. But Iron and Steel Production accounts for less than 1% of national GHG emissions. Other sectors and sub-sectors represent more important GHG sources or sinks: for example, Solid Waste accounts for almost one-fifth of national emissions. Improved estimation of the GHG characteristics of these sectors/sub-sectors would have a tangible impact on the national inventory. But, as outlined below, many of these sectors/sub-sectors are already being served by other initiatives and projects and there is no need for GEF support. The two exceptions are:

The Forestry sub-sector. Forests cover approximately 25% of the land area of Mauritius and, as the sugarcane sector contracts, forestry and agro-forestry are being promoted by the government as alternative livelihood options for landowners. Carbon sequestration is currently equivalent to a substantial 8% of national GHG emissions. However, this sink estimate is subject to considerable uncertainty due to gaps in activity data (notably, relating to forest on privately-held land, to which the Forestry Service has had limited access, relating to trees alongside roads and rivers, and relating to the approximately 180 ha of mangrove forest) and gaps in carbon estimation factors (such as a complete lack of locally-calibrated allometric equations and root-to-shoot ratios). While a number of baseline projects are partially addressing the former (activity-related) barrier, none is addressing the latter (estimation factors) barrier.

The Livestock component of the Agriculture sub-sector. Agriculture accounts for nearly 3% of national GHG emissions, one-quarter of which are attributable to livestock (enteric fermentation and manure). The livestock population is growing rapidly (4% per year) in Mauritius, driven by rising incomes (and hence demand for meat) and farmers transitioning away from the declining sugarcane sector. Data paucity is specifically identified by the National Greenhouse Gas Inventory Report (p. 94) as a key barrier to estimating Livestock GHG emissions: “Some activity data and EFs had to be estimated by using expert knowledge... It is anticipated to empower FAREI [the Food and Agricultural Research and Extension Institute] to improve collection of livestock population data and develop local emission factors to reduce the uncertainty level.” Furthermore, FAREI has developed a detailed proposal to improve enteric fermentation GHG estimates that represents an immediate entry-point for GEF support.

**Table 1: Improvements Required to the National Greenhouse Gas Inventory**

Sector	Adopted GHG Estimation Approach	Improvements Required
% of national GHG emissions (excludi	(As noted in the National GHG Inventory and Third National Communication)	

ng FOLU sink)		
Energy (77%)	Tier 1 approaches were adopted for all energy sub-sectors, using IPC C default emission factors. Fugitive emissions from fuels were not estimated.	<i>Inventory, page 7:</i> “The adopted approach is the simplest Tier 1 but with country-specific net calorific values.”
Energy Industries (46%)	Tier 1 approach but with country-specific net calorific values (NCVs), which were derived from the energy statistics maintained by Statistics Mauritius. Mass and volume data on fuel imports were provided by the State Trading Corporation (STC). Consumption data was obtained from CEB, IPPs and Statistics Mauritius. Default emission factors from the 2006 IPCC guidelines were used.	<i>Inventory, page 54:</i> “The activity data used for Energy Industries are quite detailed and obtained at plant level. However, this is not the case for EFs...It would be useful for the carbon content of fuels to be tested, so that country-specific carbon emission factors could be used rather than default ones from the 2006 IPCC guidelines.”
Manufacturing Industry and Construction (7%)	The activity data comprised the fuel used for the Manufacturing Sector in the Energy Statistics produced by Statistics Mauritius. The split among the manufacturing sub-categories required the estimations of fuels used in boilers based on the proportions of boilers available in each of the sub-categories. Activity data for construction sector are not accounted in energy statistics published. Crude estimates are used as per Third National Communication (TNC) method developed by Consultants are still used to derive activity for construction.	<i>Inventory, page 55:</i> “The approach adopted was Tier 1 since not enough country-specific EFs were available.”
Transport (19%)	Tier 1 approach used. The NLTA maintains a vehicle database containing information on types of vehicle (including light-duty and heavy-duty split into fuel-types), age of vehicle, and use of catalyst and fuel-injection technology. Fuel consumption and vehicle km travelled estimated from sample surveys of large vehicle fleet operators.	<i>Inventory, page 61-62:</i> “The lack of country-specific EFs prevented use of Tier 2 or Tier 3 for CO <sub>2</sub> emissions.”  <i>Inventory, page 145:</i> “Need for [data relating to] vehicle kilometres (surveys), vehicle emissions (tests) and country-specific emission factors.”
Energy Other Sectors (4%)	Tier 1 approach adopted. Activity data, primarily use of LPG by households and the commercial sector, was obtained from the national energy statistics.  For sub sector Agriculture/Forestry/Fishing/Fishing Farms no visibility exists concerning sub sector Fishing (mobile combustion). A proxy method developed by Consultants during TNC is still being used to capture activity data. This method uses mean fish catch per man-day	<i>Inventory, page 69:</i> “The activity data used for this category was sufficiently detailed...Improved development of sub-sector EFs will ensure more accuracy.”  A good institutional arrangement could be made with co-oper

	capture activity data. This method uses mean fish catch per mangrove to estimate fuel used. There is also the issue of pleasure craft activities carried out in the tourism sector which are not properly captured.	ation of the govt bodies, hotels and private service providers to submit activity data.
Industrial Processes and Product Use (IPPU) (1%)	Source categories covered by the inventory are Mineral Products (primarily Metal Production – Iron & Steel) and ODS substitutes. A Tier 1 approach was used.	<p><i>Inventory, page 72:</i></p> <p>“Although Iron &amp; Steel Production is a key category within IPPU, its contribution to GHG emissions is only minor.”</p> <p>“Following 2006 IPCC guidelines, since IPPU is not a key category, not much time and effort was put to use to develop higher-Tier methods for this category.”</p>
Agriculture, Forestry and Other Land Use (AFOLU)	GHG sources include enteric fermentation, manure management, agricultural soils and field burning.	<p><i>Inventory, page 86:</i></p> <p>“It is recognised that this sector needs improvement.”</p>
Agriculture (3%)	<p>Most agricultural activity data was obtained locally, but EFs used were Tier 1 default factors drawn from the IPCC 2006 Guidelines.</p> <p>The Island of Mauritius meet its growing demand for cattle meat from imports of cattle. As per IPCC Guidelines no mention is made of how to treat imported cattle in estimation of GHG emissions.</p>	<p><i>Inventory, page 94:</i></p> <p>“Some activity data and EFs had to be estimated by using expert knowledge...It is anticipated to empower FAREI to improve collection of livestock population data and develop local EFs to reduce the uncertainty level.”</p> <p>Help and assistance from IPCC Experts in livestock needed.</p>
Forestry (-8%, net sink)	Removals in the forestry sector were estimated using local activity data and default Tier 1 removal factors (gain-loss method). Above-ground biomass and the soil carbon pools were considered.	<p><i>Inventory, page 102:</i></p> <p>“Most of the country-specific factors were not available (basic wood density, biomass expansion factors, root-to-shoot ratio, amongst others). The removal factors utilised were mostly default values.”</p> <p><i>Inventory, page 107:</i></p> <p>“The major data gaps identified were lack of data and maps for general land cover changes and land uses for the past 10 years and lack of data on private forest lands.”</p> <p><i>TNC, page 150:</i></p>

		"Limited data on privately-owned forests, trees along rivers and roadsides; and on natural forests (types of trees, age distribution, annual increment)."
Waste (20%)	GHG emissions were generally calculated using local activity data (e.g. amount of waste landfilled, population connected to the sewer network) using Tier 1 emission factors	<i>Inventory, page 121:</i> "The waste sector is reliant upon accurate and regularly updated data on solid waste composition. The activity data for liquid wastes needs to be studied with a view to develop country-specific EFs."
Solid waste (18%)	The IPCC waste model was used to estimate CH <sub>4</sub> emissions from the Mare Chicose sanitary landfill. A fraction of the biogas is captured and used to generate electricity, for which good data exists; the inventory quantifies the CH <sub>4</sub> emissions that are vented without capture and without oxidation in the cover of the landfill. Composting and waste incineration (clinical waste only) are minor emissions sources, for which default IPCC EFs are used.	<i>Inventory, page 127:</i> "Mauritius has country-specific and accurate [municipal solid waste] data."  <i>TNC, page 150:</i> "Insufficient EF development for emissions from waste."
Liquid waste (1%)	Activity data were sourced from treatment plants, metered water statistics and hotel occupancy rates. Water characteristics were determined using laboratory analyses (SNC Report, 2010). Default CH <sub>4</sub> emission factors were used.	<i>Inventory, page 139:</i> "Data on population connected to each wastewater treatment plant is needed for calculations and can be provided by carrying out surveys in catchment areas of the unsewered network...Further waste characterisation will be carried out to have more accurate data for percentage of waste (paper, garden and others)."  <i>TNC, page 150:</i> "Lack of data on emissions at treatment plants and records of population connected...Capacity building is needed on development of EFs."

In addition to data-specific issues, other barriers serve to hinder the GHG inventory process in Mauritius, and hence weaken the country's transparency and reporting obligations under the Paris Agreement.



Indeed, Article 13 of the Paris agreement establishes an Enhanced Transparency Framework (ETF) for action and support which includes new reporting provisions to its signatories. It outlines the information required of non-Annex I Parties to be submitted to the UNFCCC no less frequently than on a biennial basis in Biennial Transparency Reports (BTRs): a national inventory report (para. 7a), progress made in achieving the NDC (para. 7b), information related to climate change impacts and adaptation (para. 8) and information on technology transfer and capacity building support needed and received (para.10). ETF provisions were further detailed in the modalities, procedures, and guidelines (MPGs) of the ETF through a decision 18/CMA.1. As much as these MPGs are extensive and very detailed, Mauritius along with many other countries lack of capacity to follow them in their entirety. Being aware of this, the convention created a Paris Committee on Capacity building (PCCB), whereas the Global Environmental Facility (GEF) introduced a dedicated finance measure (Capacity-building Initiative for Transparency - CBIT), to support capacity-building of developing countries. In this context, the objective of this project is to support Mauritius to overcome the challenges resulting from the full implementation of the Paris Agreement and the enhanced transparency framework.

To date, Mauritius has relied upon a system of temporary, ad hoc institutional arrangements to undertake National Communications and their associated inventories, whereby ministries and other institutions have supplied staff members to technical working groups for limited periods of time. This has led to coordination challenges (over 75 such institutions were involved in the Third National Communication), as well as limited institutional memory (as it is rarely the same staff members who work on successive National Communications), a lack of systematic data archiving and a heavy reliance upon short-term consultants. As Mauritius moves towards a more demanding reporting under the ETF, there is a greater need for institutional continuity and systematic procedures, including deeper engagement with civil society and the private sector. There is a pressing need to build internal capacities for data collection and GHG estimation to improve data supply and quality in the national greenhouse gas inventory.

There is a need to develop a sustainable solution for archiving the data collected; currently, data is fragmented across multiple computers, is not readily accessible and is difficult to reconstruct for the purposes of building time-series. The Climate Change Division (CCD) of the Ministry of Environment, Solid Waste Management and Climate Change (MoESWCCC) operates an online Climate Change Information Centre (CCIC) , which offers a ready-made solution to the data archiving problem. Indeed, the CCIC could straightforwardly be upgraded to become a 'climate transparency portal' that hosts both outward-facing content (reports, strategies, public data-sets, etc.) and internal data (e.g. raw and processed inventory data, GIS files, Excel models, IPCC software files, etc.).

#### **1.a.2) the baseline scenario and any associated baseline projects**

The baseline scenario has not changed significantly during the project preparation period. The following paragraphs summarizes the baseline scenario and baseline projects. Additionally, Section II and Section III of the accompanying project document includes a more detailed assessment on how the main constraints and gaps identified are addressed in the CBIT project.

#### **Legal and regulatory framework for climate change**

In view of its commitment to address climate change, Mauritius was among the first 15 countries to sign and ratify the Paris Agreement in New York on 22 April 2016. The government is also planning to introduce a Climate Change Act to serve as an organising framework for its broad array of existing policies, programmes and strategies relating to climate change:

Vision 2030. The government has set up a High-Powered Committee to prepare a Blueprint for Vision 2030, which will comprise action plans for immediate priorities such as sustainable development, poverty alleviation and the environment. The SDGs, including SDG 13 on Climate Action, are being integrated within Vision 2030.

Public Sector Investment Programme. The PSIP makes provisions for (among others) the purchase of critical disaster risk equipment for National Emergency Operations, the installation of a Multi-Hazard Early Warning, Emergency Alert and Advisories System, and the upgrading and construction of new drains in flood-prone areas.

National Climate Change Adaptation Policy Framework. The Framework integrates climate change into core development policies, strategies and plans.

Disaster Risk Reduction Strategic Framework and Action Plan. The DRR Strategic Framework and Action Plan addresses, in particular, the risks of inland flooding, coastal inundation and landslides. The government enacted an associated National Disaster Risk Reduction and Management Act in July 2016.

Climate Change Charter for Local Authorities In order to mainstream climate change in the development agenda of local authorities, a Climate Change Charter for Local Authorities has been developed with the objective of initiating and upscaling actions on adaptation to the adverse impacts of climate change and on the mitigation of GHGs emissions at council and community levels.

Gender. MoESWMCC is currently reviewing its Gender Policy Statement (originally formulated in 2012), which is consistent with the operational guidelines of the National Gender Policy Framework (2008). The Statement provides a framework for mainstreaming gender in climate policies, programmes and activities, thereby promoting women's equal participation with men as decision-makers in shaping a sustainable development society.

#### **Relevant sector policies and plans include:**

The Long-term Energy Strategy 2009-2025 (LTES) is currently being updated and will cover the period up to 2030; the revised LTES will be prepared for the period 2019-2030 with a target of 35% renewable energy in the electricity mix by 2025, to be maintained until 2030. The Energy Efficiency Master Plan has been validated and the Renewable Energy Master Plan has been finalised.

The Light Rail Transport (LRT) Metro Express Project was approved in 2016 and construction began in March 2017 on the occasion of the 25th Republic Day Anniversary in Mauritius. The project is intended to be complete by 2021, with Phase 1 between Port Louis and Rose Hill expected to be completed by September 2019 and Phase 2 – taking the line to 28km in length – between Rose Hill and Curepipe to be completed by September 2021. The Metro Express will be the only railway line in the country.

The Strategic Plan 2016-2020 for Food Crops, Livestock and Forestry focuses on promoting sustainable management of land, water and other natural resources, and on building capacity to enable farmers to transition to 'climate-smart agriculture'. A number of strategies and action plans have been formulated to halt and reverse the trend of forest loss and degradation, including the National Forest Policy (2006), the National Biodiversity Strategy & Action Plan (2016-2020) and the Protected Area Network (PAN) Expansion Strategy.

#### **Institutional framework for climate action**

The National Environment Commission, chaired by the Prime Minister and consisting of relevant line Ministers, is responsible for setting national environmental objectives and targets, and for ensuring coordination between ministries, parastatals and local authorities engaged in environmental programmes. The Ministry of Environment, Solid Waste Management and Climate Change (MoESWMCC) serves as the UNFCCC Focal Point. It coordinates Mauritius's actions on climate change, including the NDC, through its Climate Change Division (CCD). CCD contains nine (9) staff members, consisting of seven Environment Officers, one Divisional Environment Officer and one person attached to the CCD under the Service to Mauritius Scheme. All the staff of the CCD work on transparency issues as the latter encompasses mitigation, adaptation and monitoring, reporting and verification actions. Regarding matters pertaining to financial issues, the inputs of the Finance Section of the Ministry are also sought. More specifically, for the CBIT project, two officers of the CCD will be assigned to the project.

A Project Steering Committee (PSC), under the chair of the Permanent Secretary of MoESWMCC, was set up to provide guidance and facilitate political and stakeholder acceptance of the outcomes of the Third National Communication (TNC, 2016). A Project Technical Committee under the chair of the Director of Environment was set up to provide operational leadership to the TNC process and to deal principally with technical aspects of the TNC. Five Technical Working Groups (TWGs) were established to oversee the implementation of climate change activities in key areas, namely: the GHG inventory; mitigation assessment and environmentally-sound technologies; adaptation; education, training and public awareness; and research and systematic observation. Four additional Working Groups were established to focus on: national circumstances and the integration of climate change considerations into sustainable development plans; knowledge, information sharing and networking; capacity building; constraints and gaps; and related financial, technical and capacity needs. A total of 75 institutions were involved in the TNC process.

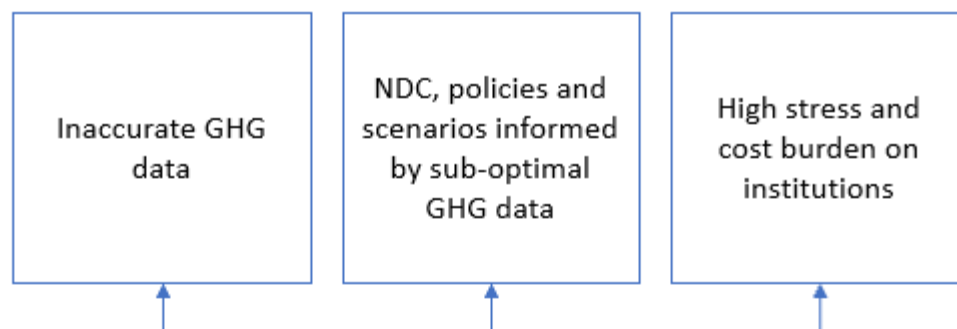
For the national GHG inventory, six Sub-TWGs were constituted, consisting largely of Ministries' and Departments' staff, as well as personnel from parastatals (such as the Central Electricity Board, CEB) and the private sector. These Sub-TWGs were: Energy Industries, Transport, Energy Other Sector, IPPU, AFOLU and Waste. Over 50 institutions were involved in collecting and processing inventory data. Notable participants included Statistics Mauritius, the Ministry of Energy and Public Utilities, the National Land Transport Authority, the Ministry of Industry, Commerce and Consumer Protection (Industry Division), the Mauritius Cane Industry Authority, the Forestry Service, the Food Agricultural Research and Extension Institute, the Solid Waste Management Division, the Wastewater Management Authority and others. The Climate Change Division (CCD) was responsible for coordinating data collection. Input of data into the 2006 IPCC inventory software was undertaken by consultants and some Team Leaders. Data processing – i.e. converting data into the form required for the IPCC software – was a laborious process that varied from sector to sector according to data availability and individual institutional capacities.

### Baseline barriers to enhanced GHG emissions transparency

Figure 1 presents the baseline scenario problem tree. As outlined above, the national GHG inventory confronts four barriers in view of meeting the requirements of the ETF and its MPGs: insufficient data (activity and/or emission factors) in Key Category sectors; a high-burden, ad hoc and not fully inclusive process by which the inventory is periodically updated; limited institutional capacities to process data in order to generate accurate GHG estimates; and absence of an adequate archiving system.

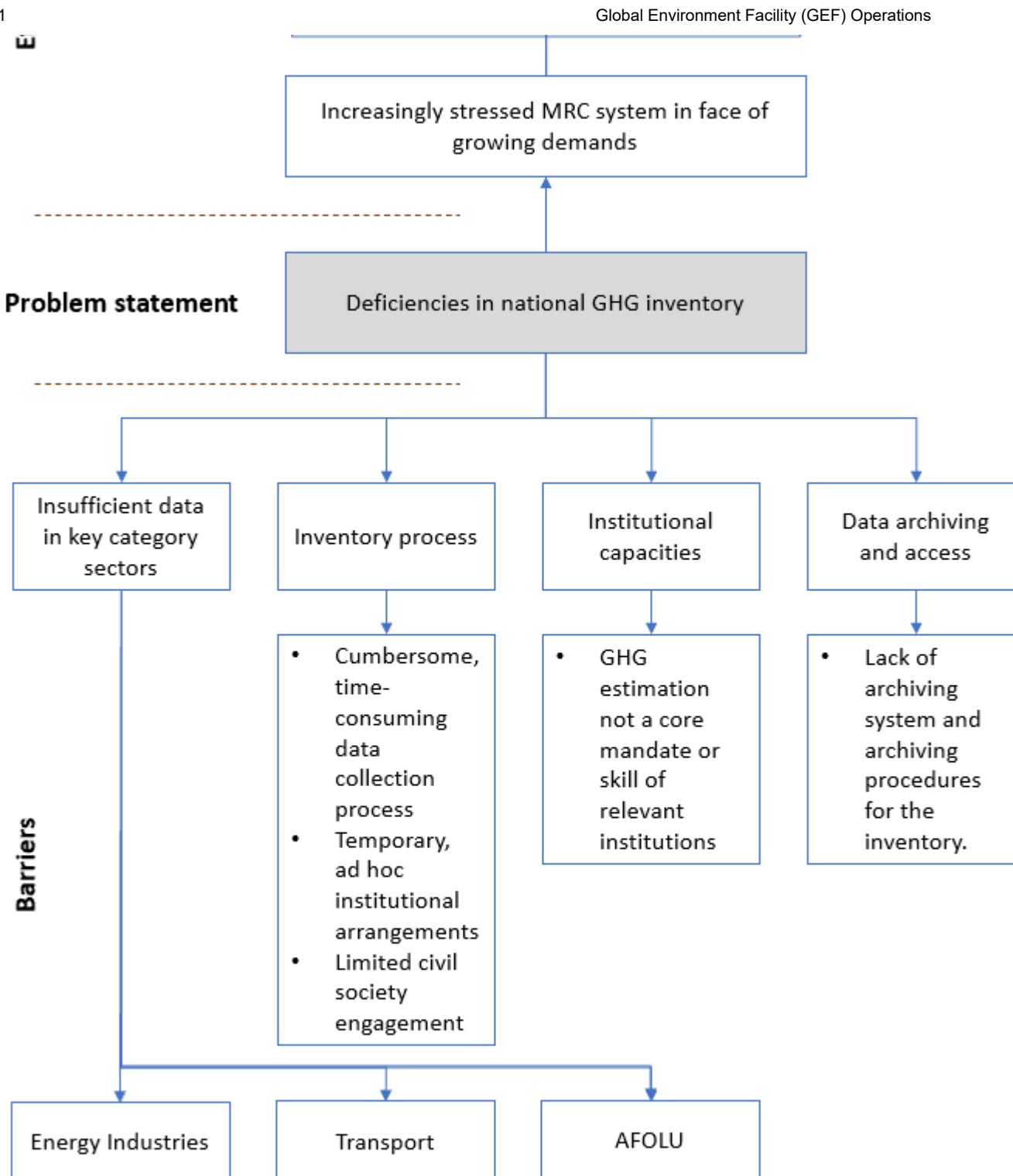
Capacities vary widely between institutions, with the result that data quantity, data quality and the degree of data processing also vary widely. In many cases, sectoral/sub-sectoral data submissions to the Climate Change Division (the entity responsible for coordinating the national GHG inventory process) are incomplete, in the wrong format or 'raw', requiring considerable follow-up work by CCD prior to entering the data into the inventory.

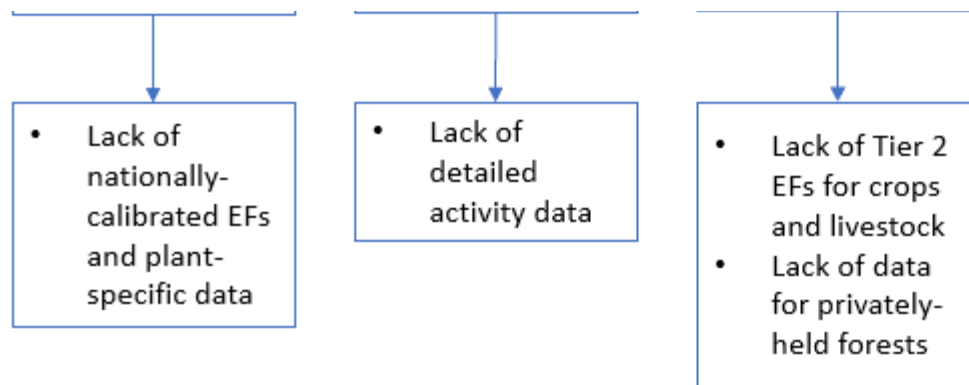
The result is an increasingly stressed MRV system that is struggling, and will continue to struggle, in the face of the new requirements set out in the ETF and its MPGs, notably the need to track NDC progress and more demanding reporting provisions related to the national GHG emission inventory.





## Problem statement





- **Figure 1: Problem Tree**
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- **Consistency with National Priorities**

**National Communication (NC) under UNFCCC:** The project responds to, and is supportive, of the National Communication process. The project design directly responds to inventory deficiencies identified in the Third National Communication and the latest National Greenhouse Gas Inventory Report. For example, the Inventory Report states (p.141): "It is recommended that, during the development of future BURs and NCs, the methodology is improved further, taking into account the development of national emissions factors in key sectors for GHG emissions and use of data from emissions monitoring systems. In addition, the development of a sustainable national inventory system, involving key organisations, in the regular update and improvement of the GHG inventory, should be established."

**Biennial Update Report (BUR) under UNFCCC:** The first BUR is currently under development. The improvements to the national GHG inventory supported by the GEF project will benefit future BURs.

**Nationally Determined Contribution (NDC) under the Paris Agreement:** The improvements to GHG accounting brought about by the GEF project will enable more accurate tracking of national and sectoral GHG emissions and will, therefore, facilitate comparisons between actual emissions and emission targets, thereby enabling corrective policy actions to be adopted as and when necessary.

**National Climate Change Adaptation Policy Framework (2012):** The key objectives of this framework are to foster the development of policies, strategies, plans and processes to avoid, minimise and adapt to the negative impacts of climate change on the key sectors and to avoid or reduce damage to human settlements and infrastructure and loss of lives caused by climate change. Besides, the framework aims to integrate and mainstream climate change into core development policies, strategies and plans of Mauritius. Even though the CBIT project is focused on mitigation, the activities of the CBIT project are in line with this policy framework; the improvements in the CCIC that will be carried out in the CBIT project will contribute to achieve its objectives.

**Technology Needs Assessment (TNA) under UNFCCC:** The TNA (2012) identifies one priority mitigation sector (Energy Industries) and three priority adaptation sectors (Water, Agriculture and Coastal Zone). The GEF project directly supports two of these (Energy Industries – locally-calibrated emission factors, and Agriculture – livestock emission factor).

**National Capacity Self-Assessment (NCSA) under UNCBD, UNFCCC, UNCCD:** The NCSA (2005) identified priority issues that are addressed by the GEF project. These include:

- Biodiversity: incomplete forest inventory.
- Climate change: use of renewable energy and energy efficiency; and the need for improved data management in the transport sector.
- Land degradation: clearing/conversion of forest on privately held land; and an unsustainable livestock production system.

***1.a.3) the proposed alternative scenario with a brief description of expected outcomes and components of the project***

The proposed outcomes of the project are as follows:

- § Outcome 1.1 Key Category sectors benefit from locally calibrated emission factors and/or activity data, enabling the inventory to advance to Tier 2 or Tier 3 GHG estimation approaches
- § Outcome 2.1 Reduced burden (time, cost) on institutions supplying data to the national greenhouse gas inventory
- § Outcome 3.1 Enhanced policy-relevance of the national greenhouse gas inventory, transitioning from a periodic UNFCCC obligation to a useful policy tool

The following text describes the outputs and activities associated with the above outcomes. A detailed description of outputs and activities is provided in Section IV of the accompanying UNDP project document.

**Component 1: Improving the accuracy and localisation of the national greenhouse gas inventory**

*Output 1.1 Development of Tier 2 emission factors for key fuels: coal, heavy fuel oil, gasoline, diesel, kerosene and liquefied petroleum gas – for application in Energy Industries, Transport, Manufacturing Industry and Construction, and Energy Other Sectors*

Lead Entities: Central Electricity Board in collaboration with Ministry of Environment, Solid Waste Management and Climate Change, the University of Mauritius, Business Mauritius, Ministry of Industrial Development, SMEs and Cooperatives and the Energy Efficiency Management Office.

This output will result in the development of Tier 2 emission factors for the 2006 IPCC category 1A *Fuel Combustion Activities*, enhancing the accuracy of the GHG emission inventory and facilitating the assessment of impact of mitigation policies in the energy sector. This output will also result in improved capacity on 2006 IPCC methodologies in the relevant institutions of the country.

Mauritius consumes 8 different fossil fuels in different sectors according to the national GHG emission inventory. Energy consumption by fuel type is the activity data used in the inventory of Mauritius for the IPCC category 1A *Fuel combustion Activities*, which encompasses the sub-categories 1A1 Energy Industries, 1A2 Manufacturing Industries and construction, 1A3 Transport and 1A4 Other sectors (which includes the Commercial, Institutional and residential sectors as well as the fuel combustion in agriculture, forestry, fishing and fish farms). All of the fossil fuels consumed in Mauritius are imported and hence easily accounted for and testable. Working with the University of Mauritius, which has already undertaken some preliminary analysis of the coal emissions, the GEF project will support the process of elaboration of Tier 2 CO<sub>2</sub> emission factors for these fuels. This will serve to improve the accuracy of the national GHG inventory across multiple sub-sectors that, together, account for almost 80% of national emissions. The activities and results of this output will complement the improvements to activity-related data in the Transport sub-sector that will be supported under Output 1.3. Furthermore, it will also actively support mitigation measures being undertaken by other initiatives. For example, a national energy efficiency MRV system will be established under the UNDP-GEF project, 'Realising energy savings and climate benefits of implementing mandatory energy auditing in the Republic of Mauritius', which will monitor energy consumption (and energy savings) in industrial and manufacturing processes such as steam production. The availability of Tier 2 emission factors for fuel oil and LPG will facilitate more accurate estimates of GHG emissions (and GHG mitigation) from these processes.

## Proposed Activities:

· Developing a methodological approach for the development of Tier 2 emission factors, including the definition of the scope, survey design, definition of laboratory testing required, and all methodological steps needed to derive national specific emission factors for the inventory. The process shall ensure the emission factor is in line with 2006 IPCC methodologies and good practices. The specific activities to be carried out in this output will be defined in the methodological approach, ensuring that the expected outputs are achieved, and could include, among others, the following tasks:

- o Collecting the necessary samples with the collaboration of the energy stakeholders of the country.
- o In line with the methodological approach, undertaking laboratory analysis in the premises of the University of Mauritius. The fuel characteristics of the sample and the combustion emissions under controlled circumstances need to be fully documented, allowing to derive national specific emission factors in line with the selected methodology.
- o Processing the information generated for deriving national-specific combustion emission factors.
- o Compare the results obtained with other national-specific emission factors and default values provided by 2006 IPCC Guidelines.
- o Prepare a report documenting the entire process followed for developing the national specific emission factors.
- o Capacity building to energy stakeholders on 2006 IPCC methodologies, including sectoral and reference approaches, estimating uncertainty, and developing and using energy balances. The capacity building exercise shall also address the development of advanced Tier approaches, so the stakeholders can replicate the same approach in other inventory categories in the future. The type of capacity building activities can include workshops, webinars, or recorded tutorials. The capacity building exercise will be documented in a manual to make sure it is used beyond project implementation. The capacity building will include a dedicated session for gender mainstreaming in mitigation actions, and will foster the active participation of women, in line with the gender action plan described in Annex 9 of the ProDoc

*Output 1.2 Development of Tier 3 emission factors for Mauritius's 8 thermal power plants and a real-time grid emission factor – for application in Energy Industries and (increasingly) Transport*

Lead entities: Ministry of Energy and Public utilities in collaboration with Ministry of Environment, Solid Waste Management and Climate Change, Mauritius Renewable Energy Agency (MARENA), the Central Electricity Board, the Air Pollution Monitoring Unit of the Mauritius Cane Industry Authority, the Energy Efficiency Management Office, Business Mauritius, Independent Power Producers including Alteo Ltd, Terragen Ltd and Omnicane, and the University of Mauritius.

This output will result in the development of Tier 3 emission factors for electricity generation (emission source 1A1a *Electricity Generation* within the national GHG emissions inventory), further enhancing the accuracy of the national GHG emissions inventory. The output will also result in the obtainment of a real-time grid emission factor, which is needed for estimating the impact of mitigation action and mitigation options. These two elements (Tier 3 emission factor for electricity production and the real time grid emission factor) will be essential for developing accurate cost-benefit analysis of possible mitigation alternatives in the energy system in Mauritius. This output will also result in improved capacity on 2006 IPCC methodologies in the relevant institutions of the country.

The 8 thermal power plants in Mauritius – which use coal, heavy fuel oil, biomass and kerosene– account for 85% of the country's installed power capacity.<sup>[1]</sup> The Central Electricity Board (CEB) operates 4 of these plants and Independent Power Producers (IPPs) the remaining four. Online Continuous Emission Monitoring Systems (OCEMSs), which are a condition of the IPPs EIA licenses, are available in these power plants, producing the data which can be used to develop plant-specific emission factors. However, there is no uniform standard as to which gases should be monitored, nor of the parameters they have to

adhere to. This has resulted in each IPP having their own monitoring methodology. Alteo Ltd., an IPP, has, for example, already developed a coal CO<sub>2</sub> emission factor for its plant using its OCEMS. Working with the University of Mauritius, the Air Pollution Monitoring Unit of the Mauritius Cane Industry Authority (MCIA), the CEB and IPPs, the GEF project will develop Tier 3 CO<sub>2</sub> emission factors for the country's 8 thermal power plants. In conjunction with the improved plant-specific activity data that will be supplied by the MRV system being established by the UNEP-GEF NAMAs project, this will enable emissions to be accurately tracked – at Tier 3 level of accuracy – in the national GHG inventory.

Combined with CEB data relating to real-time power injections into the grid from the thermal power stations, bagasse plants, hydro-power plants, and wind and solar farms, a real-time weighted-average grid emission factor will, in conjunction with the Mauritius Renewable Energy Agency (MARENA) and Business Mauritius[2], be developed and tracked on a second-by-second basis. By revealing diurnal and seasonal patterns in grid emissions, mitigation efforts – such as energy efficiency interventions in industry and buildings, and electricity tariff-setting – can be optimised for maximum emission-reduction benefits. Similarly, as battery recharging becomes more widespread as the transport sector electrifies, real-time grid emission data will be invaluable in guiding policy-makers, bus companies and private consumers with regard to the best (least-emission) times to plug into the grid.

#### Proposed Activities:

- Defining the scope and the methodological approach to follow for obtaining the Tier 3 emission factor and real time grid emission factor in coordination with energy stakeholders. The specific activities to be carried out in this output will be defined in the methodological approach, ensuring that the expected outputs are achieved, and could include, among others, the following tasks:
  - o Collecting data from the eight thermal power plants for a common time period, as defined in the methodological approach.
  - o Process the data and perform the necessary calculations to define the Tier 3 emission factor in line with 2006 IPCC Guidelines.
  - o Regarding the grid emission factor, as the objective is to estimate a real time grid emission factor, there would be a need to define a benchmark or a range in which the estimates can fluctuate. For that, there will be a need to process the data and perform the necessary calculations for estimating the benchmark for the grid emission factor.
  - o Define the roles and responsibilities of the entities involved in both the estimation of the Tier emission factor and the real time grid emission factor.
  - o Automate the calculation for the real time grid emission factor and define the information flow.
  - o Prepare a timeline and a workplan for future updates of both the Tier 3 emission factor and the real time grid emission factor. The workplan for the future update of the Tier 3 emission factor will include, among others, the following milestones: processing new information for the updated emission factor, performing the calculation, validation between stakeholders, incorporation in the estimates of the GHG emission inventory. The Workplan for future updates of the real time grid emission factor would include, among others, the following items: assessing the method used for the calculation of the real time grid emission factor, identifying improvement alternatives, agreeing in an improved approach, if appropriate, implementing the improvements.
  - o Capacity building to energy stakeholders on 2006 IPCC methodologies and on how to estimate the impact of mitigation actions in the energy sector. The type of capacity building activities can include workshops, webinars, or recorded tutorials. The capacity building exercise will be documented in a manual to make sure it is used beyond project implementation. The capacity building will include a dedicated session for gender mainstreaming in mitigation actions, and will foster the active participation of women, in line with the gender action plan described in Annex 9.



*Output 1.3 Development of Tier 2 activity data for Mauritius's land transport sector (road, Metro), augmented by gender and socio-economic usage data*

Lead entities involved: Ministry of Environment, Solid Waste Management and Climate Change in collaboration with the National Land Transport Authority (under the aegis of the Ministry of Land Transport and Light Rail) and Statistics Mauritius.

This output will result in improved transport statistics in Mauritius, which will directly contribute to improving the estimates of the national GHG emission inventory and will facilitate the design and implementation of mitigation actions in the transport sector. This output will also result in improved capacity on 2006 IPCC methodologies in the relevant institutions of the country.

Mauritius has a well-developed road network system of 2,502 km<sup>[3]</sup>, of which 100 km are motorways. The number of vehicles is known to be increasing by 5% per year<sup>[4]</sup> (and more for certain vehicle classes – 9%/year for private cars and 12%/year for motorbikes, for example), and the total number of registered vehicles increased by 51% between 2009-18. While the National Land Transport Authority (NLTA) maintains detailed digital records of vehicle numbers, types and characteristics, there is considerably less information available about vehicle usage – journey frequencies, durations, average speeds and occupancy rates – that, in conjunction with the fuel emission factor (to be addressed under Output 1.1), determine GHG emissions from the land transport sector. The 2017 national GHG inventory used a top-down approach to estimate Transport sub-sector emissions, using the aggregate sectoral fuel consumption statistics published by Statistics Mauritius in conjunction with assumptions about vehicle usage. However, the survey information that informed those assumptions suffers from a number of deficiencies, notably its dated (in some case decade-old) provenance, its bias towards the bus fleet (which accounts for just 7% of Mauritian vehicles but for which detailed activity data is available) and, importantly, the fact that it does not capture the impact of the soon-to-be-opened (September 2019) Metro Express system which, as Mauritius's only railway and serving Mauritius's capital city, is likely to fundamentally transform driving patterns (modal shift from car to train, modal shift from bus to train, park-and-ride synergies between car and train, etc.).

Aside from the obvious GHG MRV benefits of undertaking updated and detailed travel surveys, granular information about journeys, travel times and public transport usage, particularly when combined with socio-economic and demographic data (i.e. information about the passengers themselves – age, gender, disabilities, employment status, etc.), can be invaluable for informing government policy on such diverse matters as infrastructure investment (road enlargement, bridge-building, etc.), planning bus routes, and calibrating fares and fare subsidies for public transport users. The GEF project will therefore assist the NLTA to undertake a systematic survey programme to generate a detailed set of transport activity data that will enable the use of a Tier 2 estimation approach in the Transport sub-sector. Because the incremental cost of including socio-economic, gender and demographic data in such surveys is negligible, such data will also be collected for public policy purposes. It is envisaged that traditional questionnaire surveys, road-count censuses and GIS analysis will be augmented by more cutting-edge approaches, potentially the use of volunteers' (vehicle owners, bus passengers, Metro Express users) mobile phones as journey tracking devices.

Proposed activities:

- To improve the estimates of the national GHG emission inventory and facilitate the design and implementation actions in the transport sector, a methodological approach will be developed, mainly by one contractor and the NLTA. This will define specific activities to be carried out and will include, among others, the following tasks:
  - o Identification of best international and regional practices for transport use surveys. This will include the development of several case studies to analyse in detail the most successful applicable cases.

- o Considering best international practices, design a survey methodology for obtaining data on journey characteristics, including journey frequencies, durations, average speeds, and occupancy rates, disaggregating the information by gender. The design will be made together with NLTA to address possible improvement areas in its statistics.
- o Conducting a pilot test of the survey methodology, collect data and process it.
- o Produce a methodological report with the results of the process, identifying gaps and weaknesses and proposing a roadmap for the implementation of the transport use survey in the regular operations of the NLTA.
- o Perform a capacity building exercise to relevant stakeholders (including NLTA) for identifying and estimating the mitigation impact of transport mitigation actions in line with the enhanced transparency framework requirements. The capacity building exercise shall also address the development of advanced Tier approaches, so the stakeholders can replicate the same approach in other inventory categories in the future. The type of capacity building activities can include workshops, webinars, or recorded tutorials. The capacity building exercise will be documented in a manual to make sure it is used beyond project implementation. The capacity building will include a dedicated session for gender mainstreaming in mitigation actions, and will foster the active participation of women, in line with the gender action plan described in Annex 9 of the ProDoc.

*Output 1.4 Development of Tier 2 enteric fermentation emission factors and model for livestock*

Entities involved: Ministry of Environment, Solid Waste Management and Climate Change in collaboration with the Food and Agricultural Research and Extension Institute.

This output involves the improvement of the estimates of the national GHG emissions inventory of Mauritius, specifically in category 3A *Livestock*. At least one enteric fermentation factor for dairy cows will be obtained through an empirically calibrated statistical model, which will be made freely available to inform future academic work in Mauritius and the development of emission factors elsewhere. Furthermore, this output will result in improved technical capacity in national stakeholders involved in the AFOLU sector. This output will also result in improved capacity on 2006 IPCC methodologies in the relevant institutions of the country.

In principle, there are more than 80 emission factors for the livestock sector that pertain to CH<sub>4</sub> from enteric fermentation, CH<sub>4</sub> from manure management systems and N<sub>2</sub>O from manure management from a range of livestock – dairy cows, sheep, goats, horses, pigs, chickens, etc. In Mauritius, however, enteric fermentation accounts for approximately 60% of livestock emissions and ruminants (cattle, deer, goats, sheep) account for 75% of these enteric emissions, with cattle alone accounting for 37% of enteric emissions. Enteric fermentation emission factors for cattle vary considerably according to breed, region and feeding regime. The IPCC Tier 1 enteric fermentation emission factor for North American dairy cows (128 kg CH<sub>4</sub>/head/year) is, for example, 64% higher than the equivalent emission factor for African and Middle Eastern cows. In its national GHG inventory, Mauritius uses the Tier 1 African and Middle Eastern emission factor. However, the Mauritian cattle production system differs considerably from that of the broader region (inasmuch as a single 'African' system can be said to exist anyway) – for instance, in the preponderance of the Friesen-Creole breed and in the unique molasses/bagasse/straw feed that is given to cattle (the raw materials being by-products of the local sugar industry). The actual emissions produced by Mauritian cattle can, as a consequence, be expected to deviate significantly from the generic IPCC emission factor.

Although no research work has been undertaken to date to determine a local enteric fermentation emission factor, the Food and Agricultural Research and Extension Institute (FAREI), as the lead entity on the AFOLU Sub-TWG of the last national GHG inventory, is well aware of the current deficiencies in estimating livestock emissions and has expressed considerable interest in developing a Tier 2 emission factor. The GEF project will therefore assist FAREI in developing at least one Tier 2 livestock (dairy cow) enteric fermentation factor (i.e. a factor for converting the gross energy in cows' diet to methane), and potentially more

than one if this is deemed useful (e.g. if statistical analysis reveals significant differences in emissions between cattle age-classes) and is possible given budgetary and time constraints. To estimate the emission factor(s), an empirically-calibrated statistical model will be constructed that evaluates the relationships between feed input characteristics (composition, digestibility, etc.), animal characteristics (metabolic energy requirements, lactation, locomotion, mass, milk production, etc.) and methane production. This model will be made freely available to inform future academic work in Mauritius and the development of emission factors elsewhere. The model will also be used by FAREI – outside of the framework of the GEF project – to develop cattle feed methane scenarios (i.e. scenarios involving different compositions and amounts of feed that lead to varying levels of methane emissions), so as to inform the Strategic Plan of the Ministry of Agro-Industry and Food Security, which includes an item concerning the reduction of CH<sub>4</sub> from ruminant feeding regimes.

Proposed activities:

- Developing a quality assurance exercise of the AFOLU sector of the latest available inventory in Mauritius, to identify weaknesses, constraints and gaps. The results of the QA exercise will feed the improvement of output 1.4, Output 1.5 and output 1.6.
- Identify and analyse Tier 2 and Tier 3 enteric fermentation emission factors available in the emission factor database of IPCC and in other countries with similar cattle characteristics. The procedure followed for developing already available Tier 2 and Tier 3 emission factors will feed into the design of a methodology to derive Tier 2 and Tier 3 emission factors in Mauritius.
- Design a methodology for creating a statistical model together with FAREI to derive Tier 2 emission factor for the national GHG emissions inventory.
- Using the above model, estimate a Tier 2 emission factor for enteric fermentation emissions to be used in the inventory of Mauritius.
- A capacity building workshop to FAREI and other relevant AFOLU stakeholders in 2006 IPCC Guidelines and in the development of Tier 2/Tier 3 emission factors. The type of capacity building activities can include workshops, webinars, or recorded tutorials. The capacity building exercise will be documented in a manual to make sure it is used beyond project implementation. The capacity building will include a dedicated session for gender mainstreaming in mitigation actions, and will foster the active participation of women, in line with the gender action plan described in Annex 9 of the ProDoc.

*Output 1.5 Development of Tier 2 allometric equations, root-to-shoot ratios and carbon densities for 4 key tree species in the Mauritian context*

Entities involved: Ministry of Environment, Solid Waste Management and Climate Change in collaboration with the Forestry Service.

This output will result in the implementation of a national specific approach for calculating the emissions of relevant emission sources within category 3B *Forest Land* of the national inventory of Mauritius. This category is one of the most significant sources of emissions in non-Annex I emission inventories and therefore, the information generated in this output will significantly contribute to improving the quality and reliability of the national inventory. This output will also result in improved capacity on 2006 IPCC methodologies in the relevant institutions of the country, which will be able to replicate the approach followed in other emission sources of the inventory.

Carbon stock changes in forest biomass are important because of: (a) the scale of forest cover, which accounts for one-quarter of the country's land area, and (b) the substantial fluxes that can arise from management and harvesting, natural disturbance, natural mortality and forest regrowth. Deficiencies in forest activity data are acknowledged in the National GHG Inventory Report and are partially addressed under Output 1.6 (see below). However, there are also considerable uncertainties associated with translating forest inventory data into carbon terms. Growing stock data are available for 6 key tree species (*Pinus elliottii*, *Eucalyptus sp*, *Araucaria sp*, *Tabebuia pallida*, *Cryptomeria japonica* and *Casuarina esqisetifolia*), derived from extensive data on tree species, tree

heights, diameter-at-breast height (DBH) and tree cover maintained by the Forestry Service for public forests. But the inventory was able to use only IPCC Tier 1 factors to convert approximate biomass estimates into even more approximate carbon estimates. Furthermore, the inventory considered only above-ground biomass, not (typically substantial) below-ground root systems.

What is needed are: (a) nationally-calibrated allometric (non-linear regression) equations to estimate the biomass in above-ground tree components based on diameter at breast height (DBH) and height data; (b) nationally-calibrated root-to-shoot ratios to estimate below-ground biomass on the basis of above-ground biomass measurements; and (c) nationally-calibrated carbon density factors for converting biomass estimates into carbon estimates. The GEF project will support the Forestry Service to develop these elements for 4 key tree species (drawn from the six species for which growing stock data is available) using a combination of survey plots, testing and laboratory analysis. Although, for cost reasons, the focus will be on 4 tree species, it is likely that multiple equations and factors will be developed for each species, to differentiate, for example, between trees growing in the three key ecological zones of Mauritius: wet upland forest, moist forest and dry lowland forest. Future GHG inventories will, as a consequence, benefit from Tier 2 estimation methods in the Forestry sub-category. The Forestry Service will also benefit from complementary bio-carbon training (e.g. on the FAO software package, EX-ACT) to be provided by a UNDP-GEF SLM project (see Table 2).

Proposed activities:

- Analysis of the different methodological alternatives for estimating a Tier 2 approach in the different emission sources in sub-category 3B1 Forest Land.
  - Define the scope of the analysis and propose a methodology and work plan in agreement with FAREI for the estimation of Tier 2 emission factors.
- Implement the methodological approach defined which could include, among others, the following activities:

- o Conduct the survey, testing, laboratory analysis or other techniques, if deemed appropriate, to use the targeted models as defined in the methodological approach and work plan.
- o Estimate Tier 2 emission factors for the key forest species available in the country (*Pinus elliottii*, *Eucalyptus* sp, *Araucaria* sp, *Tabebuia pallida*, *Cryptomeria japonica* and *Casuarina esqisetifolia*) and compare the results with 2006 IPCC default values and other values of similar countries.
- o Provide capacity building on the use of 2006 IPCC methodologies in the AFOLU sector, complementary to the activities carried out under UNDP-GEF SLM project (see Table 2). The capacity building exercise shall also address the development of advanced Tier approaches, so the stakeholders can replicate the same approach in other inventory categories in the future. The type of capacity building activities can include workshops, webinars, or recorded tutorials. The capacity building exercise will be documented in a manual to make sure it is used beyond project implementation. The capacity building will include a dedicated session for gender mainstreaming in mitigation actions, and will foster the active participation of women, in line with the gender action plan described in Annex 9 of the ProDoc.

*Output 1.6 Ground-truthed forest inventory of privately held forestland and non-forest tree cover (e.g. along river banks and roadsides)*

Entities involved: Ministry of Environment, Solid Waste Management and Climate Change in collaboration with the Forestry Service, and the Mauritius Chamber of Agriculture.

This output will result in the improvement of the activity data of the inventory regarding forests by the extension of the national forestry survey to wider privately owned forest areas including river reserves and along roadsides. The access to these areas<sup>[5]</sup> has been confirmed during the PPG phase, and will enable to improve the forest inventory of the country. The improved forest inventory will facilitate the improvement of the national GHG emission inventory and

will also facilitate the implementation of possible mitigation actions in the sector. This output will also result in improved capacity on 2006 IPCC methodologies and mitigation in the forest sector in the relevant institutions of the country.

There are two types of forest ownership in Mauritius: public and private. Publicly owned (i.e. State-owned) forest cover is 22,000 ha, accounting for approximately 47% of the total forest area[6]. The Forestry Service is responsible for the management of public forest and undertakes regular surveys and inventories. Privately-owned forest land covers approximately 25,000 ha, roughly 53% of the total forest area. Only about 6,500 ha of private forestland (including river and mountain reserves) is protected. Public access to private forestland is limited and, because of accessibility and cost constraints, the Forestry Service has not conducted a comprehensive forest inventory of private forest for over a decade. Remote sensing data is available and the capacity of the Forestry Service to use this data in a GIS context (e.g. through the Collect Earth tool that can be used in conjunction with Google Maps) will be strengthened by a separate UNDP-GEF SLM project (see Table 2) – so, data on forest cover and (coarse) data on the types of tree species present in private forest is available and can be analysed. But there is currently no ground-truthed data on tree species, nor basic information such as tree heights, diameters and management regimes (rotational periods, use of agro-forestry, etc.).

The GEF project will work with the Forestry Service and Mauritius Chamber of Agriculture, which represents privately-owned forests, to develop a systematic programme of site visits and inventories of privately held forests. Access to the land has been ensured during the PPG phase in interviews with relevant stakeholders (Business Mauritius and Mauritius Chamber of Agriculture).

The project aims to visit a share of the forest plantations which is representative of privately held forestland. The sampling approach could be adapted to possible restrictions to access private land. However, certain level of access will be required. During project preparation, Business Mauritius and the Mauritius Chamber of Agriculture confirmed that the access to private land for getting non-invasive samples will be ensured.

Target sites will be chosen specifically to sample a broad cross-section of forest-types (indigenous vs. alien species, lowland vs upland, timber plantation vs hunting forest, etc.). For each site visited, data on tree species (including exact geographical coordinates of trees) and tree characteristics will be collected. Tree species data will be cross-referenced against remote sensing imagery. This will enable a spectral reflectance species identification model to be developed, which will, in turn, enable the species composition of un-surveyed private forests to be inferred from satellite imagery. The allometric equations and biomass/carbon factors developed under Output 1.5 will be applied to the species data collected under Output 1.6 to improve the accuracy of the national GHG inventory as it pertains to privately held forestland. A similar approach will also be adopted in relation to non-forest trees, notably those planted along riverbanks and roadsides and in urban settings. These have hitherto not been included in forest surveys, but the Forestry Service believes that, in aggregate, they contribute substantial carbon storage, potentially as much as an additional 4-7% of 'forest' sink.

Proposed activities:

- Analyse the national forest inventory for identifying possible gaps and propose improvement areas.
- In line with the current forest survey procedures and the improvement areas identified in previous activity, and in full coordination with FAREI and landowners, propose a sampling methodology to improve the forest inventory in privately owned areas in the country.
- Support FAREI in undertaking the survey, following national procedures.
- Process the data gathered to be incorporated in the information system of FAREI. Write a methodological report on the impact of the update made.

- Provide capacity building on the use of 2006 IPCC methodologies in the AFOLU sector, complementary to the activities carried out under UNDP-GEF SLM project (see Table 2). The capacity building exercise shall also address the development of advanced Tier approaches, so the stakeholders can replicate the same approach in other inventory categories in the future. The type of capacity building activities can include workshops, webinars, or recorded tutorials. The capacity building exercise will be documented in a manual to make sure it is used beyond project implementation. The capacity building will include a dedicated session for gender mainstreaming in mitigation actions, and will foster the active participation of women, in line with the gender action plan described in Annex 9.

## **Component 2: Strengthening the national greenhouse gas inventory process**

### *Output 2.1 Implemented government roadmap for a permanent MRV structure, including firm government financing and institutional commitments*

Lead entities involved: Ministry of Environment, Solid Waste Management and Climate Change.

The objective of this output is to lay the foundations for a sustainable institutional architecture for a national climate change MRV system, which would include all components needed by the enhanced transparency framework: national GHG emission inventory, mitigation, and support. These three components together will enable Mauritius to track progress of its NDC compared to its observed emissions (i.e. national GHG emissions inventory), prospective emissions (mitigation) and support needed to implement climate action (support). Furthermore, this MRV architecture will allow the regular elaboration of national reports, including the future Biennial Transparency Report (BTR). This output will build from the developments made under the NDC review project (NDC-2), in which a domestic MRV system **for NDC tracking** will be outlined.

As outlined in the Third National Communication and the National GHG Inventory Report, the government is considering a number of options to strengthen the institutional framework for climate change in Mauritius. This reflects acknowledgement at the highest levels of government that climate change is becoming an increasingly important policy matter, both domestically and internationally, as well as the fact that the difficulties currently being encountered in data collection and processing are likely to grow in the future as climate reporting and transparency requirements become more frequent and more detailed. Another, potentially complementary, measure being considered is to include a recurring national budget line item to cover the costs of continuous MRV activities, including ongoing maintenance and improvement of the national GHG inventory. The MRV roles and responsibilities of new institutions such as MARENA and the Utilities Regulatory Authority (both established in 2016) also need to be considered.

Proposed activities:

- Analysis of the existing legal framework, competences, staffing and budgets as they relate to climate MRV of the key entities involved in the MRV system, including all entities identified in the stakeholder engagement plan of the CBIT project. Analysis of legislative gaps for the participation of the entities in the MRV system. This analysis will aim at defining detailed roles and responsibilities of all entities involved/to be involved in the national MRV system based on their current competences.
- Identification of potential actions needed to formalise the involvement of the institutions in the MRV system.
- Identify best practices in successful non-Annex I countries implementing climate change MRV systems. These case studies shall identify the roles and responsibilities of national stakeholders involved in the MRV and the legal framework in place to enable the functioning of the MRV system as well as best practices in gender mainstreaming in MRV systems.

- Based on the case studies and the analysis of competences, develop a proposal for an enhanced institutional architecture for a climate change gender inclusive MRV, which will need to respond to the information requirements of the enhanced transparency framework (GHG emission inventories, mitigation, support and NDC tracking). The institutional architecture shall clearly define the roles and responsibilities of each entity involved in the MRV system. A proposal of template for Memorandum of Understandings will be developed for its use in the MRV system, if appropriate. The proposal will include recommendations on the revision of the budget for those entities having additional MRV responsibilities under the enhanced MRV system, when appropriate.
- The potential revision of the budget to incorporate additional MRV activities under the regular operation of national entities will be specifically addressed by the Ministry of Finance, Economic Planning and Development and the involved Ministries under this output. Bilateral meetings will be held between the entities involved to identify the additional resources required. The proposal for an enhanced institutional architecture for a climate change gender inclusive MRV will include a proposal of revision of the budget to ensure the sustainability of the system.
- Validate the proposal of institutional architecture with climate change stakeholders.
- Develop a roadmap for the implementation of the enhanced institutional architecture, if appropriate.

*Output 2.2 Development of an IT-based system to simplify and streamline the inventory data collection process*

Lead entities involved: Ministry of Environment, Solid Waste Management and Climate Change in collaboration with Statistics Mauritius.

This output will lead to the development of a an Excel template-based model for data collection (i.e. a set of customised excel workbooks for the inventory data collection process), processing and submission, to automatically convert the data from the original raw format into the format needed by the GHG emissions inventory. This will reduce the time burden for data collection, facilitating the inventory process.

As outlined in the Development Challenge section, to date Mauritius has relied upon a system of temporary, *ad hoc* institutional arrangements to undertake National Communications and their associated inventories, whereby ministries and other institutions have supplied staff members to technical working groups for limited periods of time. Capacities vary widely between institutions, with the result that data quantity, data quality and the degree of data processing also vary widely. Mauritius has required the support of external consultants to collect the data from the institutions, process it to adapt it to the IPCC software format and input it into the IPCC software. The CCD with support from consultants has developed several excel formats for data collection, but these are not systematic, homogeneous and lack of the quality needed for simplifying the data collection process.

Although improvements will be made to the institutional structure surrounding MRV (Output 2.1), the ongoing reliance of CCD upon a range of line ministries and other institutions for inventory data is inevitable and inescapable, as these ministries and institutions typically have the mandates, the data-sets and the sectoral expertise required. Instead, what is needed is a simplified, streamlined process that leverages the data actually available and converts this into the data required for the inventory while minimising the time, cost and analytical burden on the ministries and institutions involved. This need not require a 'high tech' solution and, indeed, given the variety of operating systems, software packages, data formats and technological skills deployed across the approximately 50 institutions involved in supplying data to the inventory, a 'low tech', 'lowest common denominator' solution is actually preferred. Accordingly, the GEF project will work with CCD, Statistics Mauritius and each of the ~50 data suppliers to develop one Excel workbook by inventory sector adapted to the data available at the corresponding institution to meet the information requirements of the inventory. CCD has prior, positive, experience developing Excel workbooks for earlier climate mitigation initiatives. Each workbook will be tailor-made to accept the raw data available to each supplier, to automatically convert the raw data into inventory-required data and to format it into the tabular form needed for subsequent entry into the IPCC inventory software. Data provenance, limitations and processing assumptions will be fully documented in the workbook, thereby providing a 'paper trail' that can be used for subsequent quality control/quality assurance purposes. Cells containing formulae, pivot tables and output tables will be locked, so as to ensure that only raw

data can be inputted. But, even if manual input of the data from the Excel tables into the IPCC software is still required, the use of bespoke Excel workbooks will ensure that the burden on data-supply institutions is markedly reduced and that the data submitted to CCD is of the appropriate form, quality and format. The Excel workbooks will be uploaded to (by data-supply institutions) and downloaded from (by CCD) a secure area of the enhanced Climate Change Information Centre (see Output 3.2 below). This will facilitate inventory-related data exchange. The upload/download area will have differentiated user access rights such that institutions can access only 'their' workbooks and not those of other institutions, thereby respecting Mauritius's strict data confidentiality rules as well as potentially commercially-sensitive information (such as, for example, IPPs' electricity generation data).

Proposed activities:

- Analyse the existent excel workbooks at the CCD and the data available in each data provider database system.
- Analyse the possibility of developing an application programming interface (API) that allows the output tables to be seamlessly imported from Excel into the IPCC software
- Identify the gaps and needs of the existent workbooks and develop a work plan for improving the existent workbooks, creating new files when needed.
- Coordinate with stakeholders to ensure the excel workbooks are adjusted to the circumstances and expectations of both data providers and CCD.
- Develop a set of workbooks validated by stakeholders for data sharing between data providers and CCD for its use in the national GHG emission inventory. The templates will be done by IPCC sector, considering the specificities of the data available in the different institutions.
- Ensure the workbooks follow the principles of the QA/QC plan of Mauritius and verify that the data provided in the workbooks can be used to directly populate the IPCC software.

### **Component 3: Mainstreaming the national greenhouse gas inventory to enhance transparency and support policy-making**

*Output 3.1 Targeted training on the use of the new IT-based system and on the use of the inventory for policy formulation, target-setting, scenario analysis and MRV of NDC commitments*

Entities involved: Ministry of Environment, Solid Waste Management and Climate Change.

The Excel template-based model for data collection, processing and submission will be made as straightforward as possible for data-supply institutions. Furthermore, each workbook will be developed in conjunction with each data-supply institution, so that it precisely matches the data availability and data constraints that each institution faces. Nonetheless, training will subsequently be provided to the institutions on the use of the Excel workbooks and on the CCIC uploading service that will be used for submission of the completed workbooks. Although this training is not expected to be especially technical or conceptually 'difficult', it is considered useful for generating understanding and, critically, awareness of the new system. This training will be rather time-consuming, due to the fact that each workbook will necessarily be different (tailored to the precise needs of each institution). It is, therefore, envisaged that a number of training workshops will be required, each addressing a number (between 5-10) of institutions that share commonalities – e.g. institutions that cover similar sub-sectors or use similar data-types or face similar data constraints.

Proposed activities:

- Developing a capacitation plan, which will include a set of capacity building workshops and a step-by-step manual for the use of the excel template-based model.



- Delivering capacity building workshops on the use the Excel template-based model for data collection, processing, and submission. Different workshops will be developed, grouping the institutions considering their common characteristics.

*Output 3.2 Enhancing the role of the Climate Change Information Centre (CCIC) as a transparency portal*

Entities involved: Ministry of Environment, Solid Waste Management and Climate Change in collaboration with Statistics Mauritius, the Central Informatics Bureau, the Central Information Systems Division, and the Government Online Centre.

The online Climate Change Information Centre (CCIC) was established by the Climate Change Division in 2013 as a centre for climate change related data and information, assisting in decision-making. The Centre also provides early warning climate risk information to support initiative toward climate resilient community. The CCIC represents a ready-made solution to three separate problems: (a) the need for a simplified, standardised process by which institutions can supply GHG inventory data to CCD, (b) the need for a digital archive for systematic, centralised storage of inventory-related data, and (c) the need for a 'transparency portal' that provides easy access to climate information (including but not limited to GHG inventory data) to users – not just to the general public but also to institutions that wish to use inventory data for detailed policy and scenario planning purposes.

The website forms part of the overall website of the Ministry of Environment, Solid Waste Management and Climate Change. It is a website with some static information as well as downloadable pdf documents. During the PPG phase, the following improvements for the CCIC were identified together with the Central Information Systems Division and the Central Informatics Bureau:

- There is much room for improvement of the website so that it becomes more attractive, dynamic and responsive in terms of the display of information . It should also be compatible with different devices such as laptop/tablet/mobile phones and similar equipment-friendly in terms of ergonomics and navigation.
- There is in fact a need to give more visibility to the information being provided the CCIC by transforming the website into a full-fledge portal and redesigning all the pages. The portal will show the importance of GHG information dissemination to stakeholders.
- As it stands now, the CCIC cannot be used as a transparency portal, as the storage system, the way for the transfer of information, and the procedures for disseminating information are not established for this purpose. In the CBIT project, the CCIC will be established as a digital archive for systematic, centralised storage of inventory-related data, using the data provided by the different institutions in the IT format developed under output 2.2. For doing so, the following elements have to be addressed:
  - o The transfer of information method should be defined and will ideally use the Infohighway platform[7].
  - o The server for the CCIC have to be defined. The existing secured G-Cloud based on Intel Operating Systems available at the Government Online Centre (GOC), can be used as infrastructure for the central server.
  - o The dissemination format needs to be established. Data can be made available in standard format such as CSV, Microsoft Word/Excel and PDF format. This format will be of great importance to students, researchers and other stakeholders for further processing. Generation of reports in datasets format that can be uploaded to the Open Data Portal of Mauritius (<https://data.govmu.org/dkan/>).

The GEF project will work with CCD, the Central Informatics Bureau, the Government Online Centre (GOC) and the Central Information Systems Division to upgrade the CICC as per the improvement areas identified.

The CBIT project will also support MoESWMCC and Statistics Mauritius, in the context of the baseline Shared Environmental Information System (SEIS) project, to link the SEIS Indicator Reporting Information System (IRIS) to the CCIC, such that inventory data can be 'pulled' from the CCIC and displayed in IRIS on an ongoing basis.

Proposed activities:

The improvements and related priorities to be made in the CCIC will be recommended by the CCD, the Central Informatics Bureau, Government Online Centre and the Central Information Systems Division. Given the limited budget for this output, these stakeholders will need to prioritize what improvements to develop under the CBIT project and to set a roadmap for its future development. The Ministry of Environment, Solid Waste Management and Climate Change will validate and approve the recommendations. A meeting will be maintained with this purpose between these entities to define the specific activities of the output, including:

- Improving the responsiveness and compatibility of the CCIC website, redesigning all the pages of the portal.
- Defining and implementing the processes for transferring and storing information GHG emission inventory information in the portal, including the IT system developed under output 2.2.
- Defining and implementing the processes for disseminating information from the CCIC.
- Developing a roadmap for further improving the role of the CCIC as a transparency portal. This roadmap will consider the possibility to include in the CCIC a repository of climate change training material.

#### **Component 4: Monitoring and Evaluation and Knowledge Management**

Component 4 includes both standard M&E activities and the capture and sharing of project knowledge for use at the national, regional, and global level. Knowledge capture and sharing will take place throughout the project.

##### *Output 4.1 Project results and outcomes monitored and evaluated*

This output focuses on standard GEF and UNDP M&E activities, which are described in detail in Section VI.

Proposed activities:

- Conduct inception workshop and confirm project baseline and indicators.
- Monitor project implementation and results as they affect both women and men on an ongoing basis.
- Present project status and lessons learned to the Project Manager and Project Steering Committee and to the GEF in the form of a Project Implementation Report (PIR) annually in order to inform management decision-making.
- Conduct an independent terminal evaluation approximately six months prior to the completion of project.
- Prepare and submit a final report to UNDP and the implementing partner.

##### *Output 4.2 Lessons learned, and best practices shared with other Parties through the Global Coordination Platform and other cooperation networks*

This output will support knowledge management to capture, document, and share the broad variety of data, information, and knowledge generated by project activities. It will also enable Mauritius to contribute and be an active partner of the CBIT Global Coordination Platform, by exchanging information with other countries as well as actively participating in CBIT workshops. Sharing lessons learned and experiences through the global platform will ensure that Mauritius's CBIT project is aligned with other national, regional and global transparency initiatives.

#### Proposed activities

- Capture lessons learned from the project throughout implementation. This will include the development of a case-study on mainstreaming gender in CBIT projects.
- Share templates, lessons learned, and best practices with all relevant stakeholders in Mauritius.
- Share templates, lessons learned, and best practices with other Parties through the Global Coordination Platform and other regional and global cooperation networks.
- Participate in selected CBIT regional and global workshops.

#### ***1.a.4) alignment with GEF focal area and/or Impact Program strategies***

1.a.4. Alignment with GEF focal area and/or Impact Program strategies has not changed from the PIF.

The project is fully aligned to the Programming Directions for the CBIT (Dated May 18, 2016). Specifically, as per paragraph 85 of the COP decisions adopting the Paris Agreement, it will contribute to:

- a) strengthening national institutions for transparency-related activities in line with national priorities.

The CBIT project includes numerous capacity building activities for national institutions on the main climate change transparency areas. The capacity of the institutions will be significantly strengthened and ready for meeting the transparency provisions of the Paris Agreement. The following is the list of capacity building activities defined in the CBIT:

- Within output 1.1: Capacity building activities to enhance technical knowledge on 2006 IPCC methodologies, including sectoral and reference approaches, estimating uncertainty, and developing and using energy balances.
- Within output 1.2: the capacity building will cover 2006 IPCC guidelines, assessment of the impact of climate change policies and measures and information requirements under the enhanced transparency framework.
- Within output 1.3: Training for stakeholder for identifying and estimating the mitigation impact of transport mitigation actions in line with the enhanced transparency framework requirements.
- Within outputs 1.4-1.6: capacity building on the use of 2006 IPCC methodologies in the AFOLU sector, complementary to the activities carried out under UNDP-GEF SLM project (see Table 2).
- Output 3.1. is entirely dedicated to capacity bulging on the use the Excel template-based model for data collection, processing, and submission.

- b) providing relevant tools, training, and assistance for meeting the provisions stipulated in Article 13 of the Agreement.

The CBIT project addresses the development of an IT-based system to simplify and streamline the inventory data collection process; this IT system is essential to allow a more regular and demanding inventory preparation, as defined in article 13 of the Paris Agreement.

The CBIT project will also lay the foundations for a sustainable institutional architecture for a national climate change MRV system (output 2.1), which would include all components needed by the enhanced transparency framework: national GHG emission inventory, mitigation, and support. These three components together will enable Mauritius to track progress of its NDC compared to its observed emissions (i.e. national GHG emissions inventory), prospective emissions (mitigation) and support needed to implement climate action (support). Furthermore, this MRV architecture will allow the regular elaboration of national reports, including the future Biennial Transparency Report (BTR).

Furthermore, the CBIT project will extensively provide capacity training in GHG emissions inventory and mitigation, two of the main components of the enhanced transparency framework (see previous bullet) established in article 13 of the Paris agreement.

c) assisting the improvement of transparency over time.

The main objective of the project is to facilitate the collection and generation of information following international best practices and IPCC Guidelines for ensuring the sustainable preparation of national reports, thus enhancing the transparency of the climate change efforts of the country.

Because the implementation of the SDGs should be conducted at the national level, and national reports under the international climate regime can be a valuable source of information for the implementation of SDG accompanying targets, UNDP will support the Government of Mauritius in progressing regarding SDG within this project, particularly regarding SDG 13 (Sustainable Development).

#### ***1.a.5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing***

The incremental cost reasoning of the project has not changed from the PIF stage.

Improved quantification and reporting of greenhouse gas emissions has clear and immediate benefits in the form of: improved tracking of emissions progress against the NDC target; an improved basis for future revisions to the NDC target; improved international reporting (the National Communication and Biennial Update Reports); identification of GHG mitigation opportunities (and potentially greater ease of attracting international support for addressing such mitigation opportunities); and improved evidence-led policy-making.

As described in Section 1a2, the baseline scenario is characterized by a number of barriers that require GEF assistance to address. Without GEF intervention, these barriers will continue to prevail, thereby preventing Mauritius from accessing the benefits listed above. The GEF project builds on a solid baseline of past National Communications and national GHG inventories, as well as a rich ecosystem of baseline projects (see Table 4), in order to advance transparency and address the identified barriers. The co-finance mobilised by the project, represents a large amount for a project that is, at root, a rather technical intervention focused on a public good (the national GHG inventory). Furthermore, the range of institutions engaged in the project (at least 11 co-financing institutions are anticipated) is extremely high given the fact that the project is an MSP requesting USD 1,269,850 of GEF support.

#### ***1.a.6) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF***

Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF) has not changed from the PIF.

The project's global environmental benefits come in two forms:

- The project will indirectly support national mitigation efforts through an enhanced understanding of GHG emissions/sequestration from the Energy Industries, Transport, Forestry and Livestock sub-sectors, as well as identification of potential emerging shortfalls in mitigation efforts relative to the NDC target.
- The project will indirectly support international mitigation efforts through improved accuracy of GHG emissions data which, among others, can inform the periodic Global Stocktake of collective progress towards climate goals.

Additionally, the project will benefit to 120 relevant stakeholders contributing indirectly, through the enhancement of the national climate transparency framework, to climate mitigation and adaptation benefits.

#### *1.a.7) innovativeness, sustainability and potential for scaling up*

The project is innovative. It applies IPCC best practice by supporting the development of higher-Tier GHG estimation approaches for Key Category sectors/sub-sectors. The development of an Excel based IT system to streamline the inventory preparation process and the upgrading of the Climate Change Information Centre into a climate transparency portal represents an innovative (but least-cost) approach to the twin problems of (a) maintaining a comprehensive data archive and (b) ensuring stakeholders, both domestic and international, can straightforwardly access the full range of public documents and datasets relating to climate change in Mauritius. The development of the Excel based IT system will bring transparency to the inventory process in the long term, ensuring the data is collected and archived in a systematic manner. Furthermore, the enhancement of the CCIC will contribute to improve the dissemination of the inventory results to national and international stakeholders, contributing to the transparency of the process.

The project is intrinsically sustainable. It addresses a future need that is (a) recurring and (b) imposed on Mauritius by international treaty (UNFCCC) requirements – that of a periodically updated national GHG inventory that informs National Communications and BURs. By not only improving the quality of the inventory (through, for example, the development of nationally calibrated emission factors) but also by improving the process by which the inventory is compiled and by building the capacities of relevant institutions to contribute to the inventory and to better incorporate use of the inventory to inform other policy development/implementation needs, the project will ensure that its benefits are sustained into the future. The CBIT project will develop manuals to document each capacity building exercise and will develop a step-by-step manual for the use of the excel template-based model that will ensure its use by future staff. This will ensure the CBIT project will further improve the capacity of institutions in the future.

The project has high scale-up potential. Building on their experience and expertise developed during the project, Mauritian stakeholders can apply similar approaches to developing Tier 2 and Tier 3 emission factors for other sectors and sub-sectors, as well as improving activity data where required (e.g. in the marine transport sub-sector and the liquid wastewater sector). Emission factors, allometric equations and other outputs of the project will be uploaded to relevant databases (e.g. the IPCC emission factor database, the GlobAllomeTree database, etc.) for application elsewhere.

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

**LEGEND :**

C.E.B THERMAL POWER STATION	[Pink square]
C.E.B HYDRO POWER STATION	[Green square]
L.P.P THERMAL POWER STATION	[Blue square]
SUBSTATION 66 / 22KV	[Orange circle]
66 KV TRANSMISSION	[Red line]
132 KV TRANSMISSION (OPERATING AT 90KV)	[Blue line]
L.P.P SOLAR FARM	[Sun icon]
L.P.P WIND FARM	[Wind turbine icon]
METRO EXPRESS	[Thick black line]

The map shows the island of La Réunion with its coastline. Key locations labeled include Saint-Denis, Fort de France, Le Port, and La Rivière. The network consists of red lines (66 KV) and blue lines (132 KV). A thick black line indicates the Metro Express route. Various symbols represent different types of power stations and renewable energy farms.



**1c. Child Project?**

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

N/A



## 2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

A description of stakeholder involvement in project design, preparation, and validation is provided in Annex 7 of the accompanying UNDP project document. The following table describes project stakeholders, their current responsibilities and their anticipated role in project implementation.

Table 2. Project stakeholders

Type of stakeholder	Name of stakeholder	Current responsibilities and duties	Role of the stakeholder in the project
National Government Ministries and Agencies	Ministry of Environment, Solid Waste Management and Climate Change (MoESWMCC)	<p>MoESWMCC serves as the UNFCCC Focal Point. It coordinates Mauritius's actions on climate change, including the NDC, the National Communications and the BURs, through its Climate Change Division (CCD).</p> <p>The CCD contains nine (9) staff members, consisting of seven Environment Officers, one Divisional Environment Officer and one person attached to the CCD under the Service to Mauritius Scheme. the entity responsible for coordinating the national GHG inventory process.</p>	CCD under the MoESWMCC will coordinate the project implementation process with the support of the PMU. As the Executing Entity of the BUR-1, NDC-2 and UNEP-GEF NAMAs project, CCD will play a key role in coordinating the 'ecosystem' of MRV-related projects and ensuring that the GEF project maximises synergies with them. The MoESWMCC will then be involved in all outputs of the project.

		<p>The Climate Change Division (CCD) operates an online Climate Change Information Centre (CCIC)<sup>[1]</sup>, which was established by the Climate Change Division in 2013 as a source of climate change information for researchers, students, NGOs, the private sector and the general public.</p>	
<b>National Government Ministries and Agencies</b>	Ministry of Energy and Public Utilities	<p>The main activities of the Ministry revolve around the formulation of policies and strategies in the energy, water and wastewater sectors and the establishment of a responsive legal framework to govern the development of these sectors. It aims to ensure energy and water security, safe disposal of wastewater and peaceful use of nuclear technology and ionizing sources. The EEMA, CEB, MARENA, WMA and URA all fall under the aegis of the Ministry of Energy and Public Utilities.</p>	<p>The Ministry of Energy and Public Utilities will work with the Project Management Unit and all energy stakeholders in the development of outputs 1.1 – 1.3. The Ministry will have a key role in the implementation of the project, as it is the chair of the energy technical committee and Part of the Project Board /Steering Committee. See section VII on governance arrangements for more information on the tasks envisaged for the Steering Committee.</p>
<b>National Government Ministries and Agencies</b>	Ministry of Agro-Industry and Food Security	<p>The Ministry of Agro-Industry and Food Security works towards the further development of agriculture and the promotion of agro-industry focussing on safety, supply, quality, innovation and new technology. The Forestry Se</p>	<p>The Ministry of Agro-Industry and Food Security will work with the Project Management Unit and all energy stakeholders in the development of outputs 1.4 – 1.6. The Ministry will have a key role in the implementation of the project, as it is the chair of the AFOLU technical committee and Part of the Project Board /Steering Committee. See section VII on governance arrangements for more information on the tasks envisag</p>

		rice, FAREI and MCIA all operate under the aegis of the Ministry of Agro-Industry and Food Security.	ed for the Steering Committee.
<b>National Government Ministries and Agencies</b>	Ministry of Finance, Economic Planning and Development	The Ministry of Finance, Economic Planning and Development is responsible for formulating the Economic Development Policies and for the Economic Management of the Affairs of Government. Furthermore, it is responsible for the financial soundness of Government's economic policy and for the proper control of revenue and expenditure. The Ministry of Finance is the GEF Operational Focal Point and the National Designated Authority of the country in the GCF.	The Ministry of Finance, Economic Planning and Development will be represented in the project board of the Project Board /Steering Committee. The Ministry will oversee the activities of the project and its complementarities with the project pipeline in the GEF and GCF. The technical staff at the ministry will be targeted for the capacity building exercises with the CBIT.
<b>National Government Ministries and Agencies</b>	Statistics Mauritius	Statistics Mauritius is the statistical agency of Mauritius, responsible for the collection, compilation, analysis and dissemination of official statistical data. Statistics Mauritius has a key role in the development of the national GHG emission inventory, working closely with the CCD to secure access to data and to check the consistency of different data-sets. Statistics Mauritius is part of all working groups for the development of the inventory.	Due to its key role in the national GHG emissions inventory, Statistics Mauritius will be directly involved in several outputs of the project, including but not limited to outputs 1.3, 2.1, 2.2 and 3.2. For the same reason, Statistics Mauritius will be targeted for all capacity building activities of the project.  34  Statistics Mauritius will also explore initial requirements for the streamlined inventory data collection process (Output 2.2) and required design elements for the enhanced CCIC, including potential links with the S EIS Indicator Reporting Information System (IRIS) under Output 3.2.
<b>National Government Ministries and Agencies</b>	Mauritius Renewable Energy Authority	MARENA is a corporate body owned by the Government	MARENA will work with the CEB to develop a real-time weighted-average grid emission factor from

<p><b>Environment Ministries and Agencies</b></p>	<p>Renewable Energy Agency (MARENA)</p>	<p>is owned by the Government of Mauritius, which operates under the aegis of the Ministry of Energy and Public Utilities (MEPA). It was set up in January 2016 to oversee the development of renewable energy in Mauritius and ensure transition to a sustainable lifestyle through the country's energy demand being increasingly met by renewable energy to support sectoral developments in-keeping with international commitments.</p>	<p>Global Environment Facility (GEF) Operations</p> <p>a real time weighted average grid emission factor from the thermal power stations, bagasse plants, hydro-power plants, and wind and solar farms, which will be tracked on a second-by-second basis. This will support the implementation of Output 1.2.</p> <p>The MRV roles and responsibilities of new institutions such as MARENA and the Utilities Regulatory Authority (both established in 2016) also need to be considered under output 2.1</p>
<p><b>National Government Ministries and Agencies</b></p>	<p>National Land Transport Authority (NLTA) under the aegis of the Ministry of Land Transport and Light Rail</p>	<p>The NLTA is a department operating under the aegis of the Ministry of Land Transport and Light Rail. It was established under the Road Traffic Act in 1980 and has, as its main responsibilities, the registration and licensing of motor vehicles; the regulation and control of road transport; monitoring public transport; maintaining statistics relating to motor vehicles; and planning of new transport services. The NLTA was the Chair of the 2017 National GHG Inventory Transport Sub-TWG.</p> <p>It maintains a digital vehicle database that contains information on types of vehicles (including light duty and heavy</p>	<p>The NLTA will work with the Project Management Unit to design a systematic survey programme for the land transport sub-sector (private road vehicles, buses, the Metro Express). This programme will be implemented under Output 1.3 to generate Tier 2 activity data and policy-relevant socio-economic, gender and demographic data.</p> <p>This outcome will generate a detailed set of transport activity data for Tier 2 estimations in the national GHG inventory.</p>

		(including light-duty and heavy-duty split into fuel-types), the age of vehicles, and the use of catalyst and fuel-injection technology.	
<b>Academia</b>	University of Mauritius	UoM is the national university of Mauritius. The Department of Chemical and Environmental Engineering has expertise and experience in estimating fuel emission factors, as well as monitoring smoke-stack emissions (the National Air Pollution Monitoring Unit, now part of MCIA, used to be housed in the University).	UoM will design a testing action plan and GEF-supported budget for development of Tier 2 emission factors (for Output 1.1), and will work with CEB, MCIA and IPPs to develop a plan of action for calculating Tier 3 emission factors for 8 thermal power plants (for Output 1.2).
<b>National Government Ministries and Agencies</b>	Ministry of Gender Equality and Family Welfare	The Ministry serves as the lead institution responsible for the oversight, coordination, monitoring and evaluation of gender mainstreaming policies, strategies, and programmes at national level. It is working with the UNEP-GEF NAMAs project to develop a Gender Action Plan (GAP) for the NDC.	The Gender Unit of the Ministry will work with the NLTA to ensure that the systematic survey programme for the land transport sub-sector (Output 1.3) captures appropriate information about differentiated gender use, needs and challenges (e.g. with regard to the use of public transport) and is coordinated with NDC GAP needs.
<b>National Government Ministries and Agencies</b>	Central Electricity Board (CEB)	CEB is a parastatal body wholly owned by the Government of Mauritius and operates under the aegis of the Ministry of Energy and Public Utilities. CEB produces around 40% of the country's total power requirements from its 4 thermal power stations and 8 hydroelectric plants, the	CEB will work with the Project Management Unit, the IPPs, MCIA and UoM to develop a data collection and site visit programme for the calculation of Tier 3 emission factors for CEB's 4 thermal power stations, as well as explore options for an appropriate data and institutional framework (in conjunction with MARENA) for the real-time grid emission factor. Both activities will be implemented under Output 1.2.  The project will work with CEB data relating to real-time

		remaining 60% being purchased from Independent Power Producers. Currently, it is the sole organisation responsible for the transmission, distribution, and supply of electricity to the population. CEB was the Chair of the 2017 National GHG Inventory Energy Industries Sub-TWG.	me power injections into the grid from the thermal power stations, bagasse plants, hydro-power plants, and wind and solar farms, to develop a real-time weighted-average grid emission factor, in conjunction with the Mauritius Renewable Energy Agency (MARENA), which will be tracked on a second-by-second basis.
<b>National Government Ministries and Agencies</b>	Air Pollution Monitoring Unit of the Mauritius Cane Industry Authority (MCIA)	MCIA is a government body under the aegis of the Ministry of Agro-Industry and Food Security. Its role is to promote the development of the sugarcane sector and its clusters through policy measures, creating an enabling environment, research and development, and technology transfer. MCIA supports the use of bagasse as a fuel for electricity generation: 3 power plants currently use bagasse in combination with coal and one uses solely bagasse. MCIA houses the National Air Pollution Monitoring Unit.	MCIA will work with the Project Management Unit, UoM and relevant IPPs to develop a data collection and site visit programme for the calculation of Tier 3 emission factors for the 3 thermal power stations that use coal/bagasse in combination. MCIA's National Air Pollution Monitoring Unit will also develop an action plan and budget for all of those power stations that will require the installation of temporary monitoring equipment. This will support the implementation of Output 1.2.
<b>National Government Ministries and Agencies</b>	Forestry Service (FS)	FS is a department under the aegis of the Ministry of Agro-Industry and Food Security. Its principal responsibility is to manage publicly-owned forestland (22,000 ha), to ensure sustainable services from forest (ecosystem, leisure, timber, etc.) and to undertake periodic forest invent	FS will work with Mauritius Chamber of Agriculture, which represents private forests, and private land owners to develop a programme of site visits to privately-owned forestland and will make internal preparations for developing allometric equations, root-to-shoot ratios and carbon density factors, potentially stratified across different ecological zones. This will inform the implementation of Output 1.5 and Output 1.6.

		ories. Together with FAREI, FS was the Chair of the 2017 National GHG Inventory AFOLU Sub-TWG.	
<b>National Government Ministries and Agencies</b>	Food and Agricultural Research and Extension Institute (FAREI)	FAREI is a parastatal under the Ministry of Agro-Industry and Food Security. Its core responsibilities are to conduct research in non-sugar crops and livestock, and to provide agricultural extension services to farmers. Together with the FS, FAREI was the Chair of the 2017 National GHG Inventory AFOLU Sub-TWG.	FAREI will develop a detailed action plan and budget for calculation of enteric fermentation emission factors, including – as necessary – negotiated access to farms in order to undertake measurements on livestock. This will inform subsequent implementation of Output 1.4.  Furthermore, the project will assist the FAREI in constructing an empirically-calibrated statistical model that evaluates the relationships between feed input characteristics, animal characteristics and methane production. It will develop a Tier 2 livestock enteric fermentation factor (a factor for converting the gross energy in cows' diet to methane) for dairy cows to use in Mauritius's GHG inventory.
<b>National Government Ministries and Agencies</b>	Utility Regulatory Authority (URA)	The Utility Regulatory Authority (URA) is an independent body set up by the Government of Mauritius which falls under the aegis of the Ministry of Energy and Public Utilities. It works towards regulating the utility services, namely electricity, water and wastewater.	An additional measure being considered is to include a recurring national budget line item to cover the costs of continuous MRV activities, including ongoing maintenance and improvement of the national GHG inventory. The MRV roles and responsibilities of new institutions such as MARENA and the Utilities Regulatory Authority (both established in 2016) also need to be considered under output 2.1.
<b>National Government Ministries and Agencies</b>	Central Informatics Bureau (CIB)	The Central Informatics Bureau operates under the aegis of the Ministry of Information Technology, Communication and Innovation. Its main function is to promote e-Governance through the pro	The GEF project will work with the CIB, the CCD, and the CISD to upgrade the CCIC by modernising the website and add improvements to the structure of the website and enhance search functionality under output 3.2.

		vision of project management, consultancy and advisory services to Ministries and Departments for the successful implementation of e-government projects and on ICT matters.	
<b>National Government Ministries and Agencies</b>	Central Information Systems Division (CISD)	The Central Information Systems Division (CISD) was created in 1971 and operates under the aegis of the Ministry of Information Technology, Communication and Innovation. CISD is mainly concerned with the operational aspects of ICT projects.	The GEF project will work with the CISD, the CCD, and the CIB to upgrade the CCIC by modernising the website and add improvements to the structure of the website and enhance search functionality under output 3.2.
<b>National Government Ministries and Agencies</b>	Government Online Centre (GOC)	The Government Online Centre (GOC) is the centralized data center to provide Government services to citizen, business persons, government officers and non-citizens abroad. It is operational since May 2005 and is managed by the National Computer Board (NCB).	The GEF project will work with the GOC to upgrade the CCIC. It serves as an external portal for the general public to access climate information for Mauritius. By modernising the website and by adding improvements to the structure of the website and enhance functionality the implementation of output 3.2 will be realised.
<b>National Government Ministries and Agencies</b>	Ministry of Industrial Development, SMEs & Cooperatives	The Ministry of Development, SMEs & Cooperatives aims to act as a facilitator and catalyst for the development of a resilient, vibrant and competitive manufacturing sector. It works towards an innovation-led industrial sector. The Ministry is involved in the national GHG emission inventory and is part of the e	The Ministry regularly works with the national inventory, providing data and supporting the development of calculations. As part of one of the energy working groups of the inventory, the Ministry will be targeted for the capacity building exercises under output 1.1.



		energy other sector sub-working group for the development of the inventory.	
<b>National Government Ministries and Agencies</b>	Energy Efficiency Management Office (EEMO)	The Energy Efficiency Management Office was set up in 2011 to promote awareness for the efficient use of energy as a means to reduce carbon emissions and protect the environment. It implements strategies and programmes for the efficient use of energy, establish links with regional and international institutions and participate in programmes pertaining to the efficient use of energy. EEMO operates under the aegis of the Ministry of Energy and Public Utilities.	The Energy Efficiency Management Office will specifically contribute to outputs 1.1 and 1.2, regarding the development of Tier 2 and Tier 3 emission factors for the energy sector. These updated emission factors will be essential for assessing mitigation efforts for energy efficiency interventions in industry and building, and electricity tariff-setting. The EEMO will be targeted for the capacity building activities.
<b>Private sector</b>	Business Mauritius	Business Mauritius is an independent association that represents 1,200 local businesses and sectoral chambers of commerce. Business Mauritius is active in the energy and environmental areas, coordinating corporate social responsibility (CSR) activities, a Board member of Statistics Mauritius and MARENA, and a participant in the Third National Communication.	Business Mauritius will support the outputs under component 1 when needed, to develop the site visit programme and facilitate the coordination between stakeholders, when needed.
<b>Private sector</b>	Independent Power Producers (IPPs)	12 IPPs operate in Mauritius, supplying 60% of the country's electricity. Five of these IPPs operate plants that use fossil fuel (coal) or a co	5 IPPs, including Alteo Ltd, Terragen Ltd, and Omnicane will work with the project preparation team, MCIA and UoM to develop a data collection and site visit programme for the calculation of Tier 3 emission factors for the 5 IPP fossil fuel thermal power plants. This

		<p>mbination of coal and bagasse. The following stakeholder companies are part of Mauritius' IPPs:</p> <p>-Alteo Ltd powerplant has already developed a coal CO<sub>2</sub> emission factor for its plant using its Online Continuous Emission Monitoring Systems (OEMCSs).</p> <p>-Terragen Ltd group has 2 x 35 MW thermal power plants, which produces around 370 GWh of electricity annually from bagasse and coal (401 GWh in 2014).</p> <p>-Omnican Limited, incorporated in 1926, is a leader of the modern sugarcane industry born of Mauritius's centuries-old sugar industry. The primary activity of Omnicane consists in the cultivation of sugarcane and the production of refined sugar, bioethanol, thermal energy, and electricity.</p>	will inform the implementation of Output 1.2.
Private sector	Mauritius Chamber of Agriculture (MCA)	The MCA is the oldest private sector institution representing the Mauritian agricultural community. Its membership comprises about a hundred companies/producer groups/individuals, which represent practically all the agricultural producers of Mauritius. It represents the private	Mauritius Chamber of Agriculture will work together with the Forestry Service to develop a programme of site visits to privately-owned forestland and will make internal preparations for developing allometric equations, root-to-shoot ratios and carbon density factors, potentially stratified across different ecological zones. This will inform the implementation of Output 1.6.

		forests of landowners and works to formulate policies and strategies while exchanging ideas and views.	
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[1] [http://environment.govmu.org/English/Climate\\_Change/Pages/CCIC.aspx](http://environment.govmu.org/English/Climate_Change/Pages/CCIC.aspx)

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

A summary of stakeholder involvement in the project is attached separately to this CEO endorsement request, and is also attached as Annex 7 of the UNDP Project document.

**Select what role civil society will play in the project:**

**Consulted only;**

**Member of Advisory Body; Contractor; Yes**

**Co-financier;**

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

**Executor or co-executor;**

**Other (Please explain)**

### 3. Gender Equality and Women's Empowerment

**Provide the gender analysis or equivalent socio-economic assesment.**

A comprehensive and in-depth **Gender Analysis** and action plan for Mauritius, including a discussion of climate-related findings and gender activities, is provided in Annex 8 of the accompanying UNDP project document.

Gender equality and women's empowerment will be addressed throughout the project cycle in the following ways:

- The project will monitor the share of women and men who are direct project beneficiaries, and it will also monitor the nature of these benefits.
- Gender-sensitive targets and activities will be monitored in project reporting, both in annual reports and PIRs and in the biennial evaluation and the terminal evaluation.
- The project will take into account the Gender Responsive National Communications Toolkit developed by the Global Support Programme through UNDP and in collaboration with UNEP and the GEF.

The project's technical work, directed at improving the quality, continuity and availability of the national GHG inventory, will benefit men and women alike – through improved transparency, improved policy-making and an improved ability to measure mitigation efforts against the NDC target. The enhanced CCIC (Output 3.2) will have a section dedicated to gender-specific information, publications and activities as they pertain the climate change impacts and climate change mitigation/adaptation efforts. Training provided by the project (Output 3.1) will be gender balanced. Output 1.3 (Development of Tier 2 activity data for Mauritius's land transport sector) will specifically collect data on the gender (as well as socio-economic and demographic characteristics) of private and public transport users so that future government policy-making and investment decisions can incorporate gender considerations.

A gender specialist will monitor the implementation of a gender action plan during the project implementation.

**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**

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

Yes

#### 4. Private sector engagement

##### Elaborate on the private sector's engagement in the project, if any.

The private sector will be involved in two principal ways: (1) IPPs will work with the University of Mauritius, the CEB and the MCIA to develop Tier 3 emission factors for the 5 privately-owned power plants that use fossil fuels; and (2) Business Mauritius will coordinate with key private sector actors (notably private bus companies, taxi companies and private forestland owners) to supply data (e.g. vehicular activity data), participate in project data-collection activities (e.g. facilitate questionnaire surveys of bus and taxi passengers) and facilitate access to land (forests). In addition to improving the quality of the national GHG inventory, the engagement with the private sector will have spill-over engagement benefits, notably in the context of enhanced private sector involvement in the Fourth National Communication (2020) and in the context of the National Energy Efficiency Programme – a joint initiative of the Energy Efficiency Management Office and Business Mauritius – which is generating considerable data and expertise in the reduction of energy consumption in industry/manufacturing and which will be complemented by a greater (Tier 2) understanding of associated GHG mitigation benefits.

## 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):

The following table summarizes anticipated project-related risks.

Table 3. Risks

Risk	Type of risk	Risk Category	Mitigation Approach
Political risks associated with changes in government priorities	Political	L	As a climate-vulnerable SIDS, the Republic of Mauritius is a strong supporter of the UNFCCC and Paris Agreement. Furthermore, the GEF project supports obligatory (as opposed to optional) GHG reporting requirements under the UNFCCC, notably in the form of the national GHG inventory. Accordingly, it is extremely unlikely that government support for the project will decline from its currently high level. Continuous engagement with a broad range of stakeholders will further minimise impacts of any political changes on the project, as will the fact that the Executing Entity (MoESWMCC) also serves as the UNFCCC Focal Point for Mauritius.
Inadequate participation and support of all stakeholders and partners, and poor cooperation between participating institutions	Organizational	L	The project responds to explicit requests for assistance articulated in the Third National Communication and the National GHG Inventory Report, and as further reinforced in other official reports (such as the Technology Needs Assessment and the National Capacity Self-Assessment) and during stakeholder consultations undertaken for PIF development. The level of stakeholder interest and engagement is extremely high and all project interventions are explicitly aligned with the relevant institutions' strategies and policies (e.g. the Long-Term Energy Strategy, the MARENA Action Plan, the Strategic Plan of the Ministry of Agro-Industry and Food Security, etc.). Inadequate participation is, accordingly, considered to be a low risk, further mitigated by the project's intention to engage in continuous liaison with institutions, regular reporting, monitoring of progress and acknowledgement of efforts and achievements by each institution. Participating institutions have been actively involved from the beginning in design, implementation, and management decisions, and will be fully involved in project preparation. Explicit roles and responsibilities will be allocated, in line with institutional mandates and institutional roles in the national GHG inventory.
Staff turnover: Considering that the CBIT project includes targeted capacity building, there is a risk of losing the capacity and skills acquired due to staff turnover	Organizational	L/M	Capacity building activities will involve a carefully selected group of relevant experts within each ministry and agency to ensure that capacity can be retained, and succession planning will be discussed as a part of training. Guidelines and methodologies will be produced in written format (i.e., manuals), and the excel based IT system will be documented extensively, which will also contribute to retaining institutional memory.

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Climate change risks	Social and Environmental	L	<p>The mean surface temperature of Mauritius is increasing by approximately 0.16°C per decade. Annual rainfall over mainland Mauritius (i.e. excluding the outer islands) has reduced by approximately 63mm per decade over the past century. Rainfall variability has increased significantly, exacerbating water stresses in the western and northern districts while simultaneously producing more flash floods. The frequency of intense tropical cyclones (with wind gusts greater than 234 km/hour) is increasing.</p> <p>The Technology Needs Assessment (TNA) notes that the indigenous component of the electricity mix (i.e. bagasse, wind and mini-hydro) is vulnerable to this increasing climate variability. There is a risk that growing electricity demand will need to be met through increased imports of fossil fuels. Given that the reduction of energy imports is a central government policy objective and forms the centrepiece of the Long-Term Energy Strategy, any threats to the potential of domestic electricity generation to reduce energy dependence will be monitored closely. The project's support to greater transparency in the Energy Industries sector will assist such monitoring. Notably, the real-time grid emission factor developed with GEF project support will provide a key summary indicator for quantitatively assessing the evolving contribution of renewable energies to the electricity mix.</p>
Face to face meetings, site visits and workshops cannot be held due to potential restrictions (such as those due to the Coronavirus outbreak), leading to delays in project implementation.	Organizational	L/M	<p>There are several activities foreseen within the project involving face to face meetings, site visits and workshops. Site visits will be arranged following the necessary health and safety measures, avoiding contact, maintaining physical distance and wearing masks and gloves, as recommended by the medical authorities. Workshops could be replaced by recorded webinars, providing training to stakeholders that can be used after project implementation. Face to face meetings can be postponed, considering that the duration of the project is four year. If needed, face to face meeting could be replaced by videoconferences and/or calls. With these measures, the implementation of the project will be secured.</p>

Due to the continuous evolution of the COVID-19 pandemic and its already observed and potential consequences on project design and implementation, the risks, response measures and opportunities related to the COVID-19 are addressed separately, as described hereby.

### COVID-19 risk analysis, response measures and opportunities

#### Risk analysis and response measures

COVID poses a risk to several aspects of project design and implementation. The key risks are related to the availability of technical expertise, capacity and changes in timelines, stakeholder engagement processes, enabling environment, and financing. The main risks identified, and the response measure considered in the CBIT are shown in the following table.

COVI-19 related risk	Response measure
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Availability of technical expertise, capacity, and changes in timelines	Training and knowledge management activities cannot be held due to restrictions	<p>A combination of remote and digital-based guidance by international experts and utilization of national experts will be used to ensure the implementation of the activities.</p> <p>Activities related to knowledge management and possible exchanges will adhere to UNDP guidance on travel and precautions related to containment of the COVID-19 global pandemic, and the project will develop virtual or on-line activities to support these exchanges where possible. The same modalities will be employed when technical trainings are not possible in person.</p>
	Limited capacity and experience for remote work and online interactions affect the effectiveness of the interventions.	The development of guidelines, templates and manuals for each output developed within the project will ensure the outputs of the project can be used beyond project implementation and will allow the staff to access detailed information on MRV process, ensuring the sustainability of the work and reinforcing the institutional capacity of the institutions involved.
	Delays in project implementation	<p>Most activities and events will be organized and conducted using virtual platforms to ensure that any COVID-19 related limitations will be dealt with in a timely manner.</p> <p>Furthermore, the design of the project has considered delays up to one year in the implementation of the activities by splitting the work in four years and allowing most of the activities to be developed in parallel.</p>
	Limited availability of international and national consultants to support project implementation.	UNDP and the government of Mauritius maintain a list of consultants with expertise in the different MRV components and proven competences for carrying out home based assignments.
Stakeholder Engagement Process	Mobility of stakeholders and staff is affected	The project design has taken into account steps to minimize these risks such as limiting travel to or



		<p>Highly vulnerable actors and typically marginalized groups are not involved in project implementation</p>	<p>Minimize these risks such as limiting travel to or from areas where COVID-19 is prevalent, and will also provide training on regular hand washing, social distancing and wearing masks in public for the project staff and stakeholders during the inception phase. These trainings will be repeated throughout the project implementation and reinforced during settings where it is determined to be high risk areas.</p>
	Enabling Environment	Government priorities change because of the pandemic	<p>The high-level involvement and commitment of national stakeholders shown in the PPG reaffirms the interest of the country and ensures the project implementation is country driven. The design of the project activities, prioritising the use of virtual platforms, will allow stakeholder to continue with their involvement in potential lockdown phases.</p>
Financing	Co-financing availability		<p>The contribution from the government of Mauritius is provided in-kind, in the form of government personnel and public resources. Thus, the co-financing is not affected. The involvement of the staff from the PPG phase ensures the engagement of national stakeholders, that will be allowed to continue with project implementation home-based, if appropriate.</p>
	Price increase in procurement		<p>The possibilities for developing the work virtually ensures that the demand for procurement is sufficient to meet the project requirements in a cost-effective way.</p>

### Opportunity analysis

Although indirectly, most of the activities to achieve the project results are likely to have a bearing on COVID-19 efforts. CBIT will provide result in improved institutional arrangements and in the implementation of an MRV system; both of these will consider the COVID-19, and post circumstances. The national Greenhouse Gas (GHG) Inventory for the year 2016 and the Mitigation actions and their effects would also touch upon the risks and assumptions based on socio-economic impacts of COVID-19.

A positive impact from COVID-19 is opportunity to slowly introduce e-governance (online public service provision and delivery without physical interactions) over time, enabling service provisions in both rural and urban areas.

Given the fact that this project underlying principle is to cut emissions, COVID-19 is likely to have environmental and development benefits at the appropriate scale. Given the long-term need of practicing social distancing, COVID-19 is likely to introduce policy changes to many global meetings and conferences including those of the UNFCCC, GEF, UNCBD, UNCCD to enable innovative and digital modalities to be fully employed, applied and rolled out to countries. This is likely to change the modalities (currently travel heavy and posing risks of exposure through physical contact) of conducting Convention businesses and contribute to the long-term desired outcome of the Convention.

## 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.**

The project will be implemented following UNDP's national implementation modality (NIM), according to the Standard Basic Assistance Agreement between UNDP and the Government of Mauritius, and the Country Programme. UNDP will follow its operational policies and procedures established for NIM implementation and will ensure the necessary oversight of the national implementing partner. UNDP will ensure the project delivers results to the highest standards and in full compliance with UNDP and GEF policies.

UNDP is accountable to the GEF for the implementation of this project. This includes oversight of project execution to ensure that the project is being carried out in accordance with agreed standards and provisions. UNDP is responsible for delivering GEF project cycle management services comprising project approval and start-up, project supervision and oversight, and project completion and evaluation. UNDP is responsible for the Project Assurance role of the Project Steering Committee.

The Implementing Partner for this project is the Ministry of Environment, Solid Waste Management and Climate Change (MoESWMCC). The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in the accompanying UNDP project document.

The coordination between CBIT and other similar projects will be ensured by the Implementing Entity for the CBIT project, the Ministry of Environment, Solid Waste Management and Climate Change (MoESWMCC), which serves as the UNFCCC Focal Point. It coordinates Mauritius's actions on climate change and oversee directly or indirectly all climate change projects implemented in Mauritius. The PMU will work under the MoESWMCC, avoiding overlaps and exploiting synergies between projects. Further information on the proposed governance for the project is described in section VII governance arrangements.

This is described in detail in Section VII on Governance and Management Arrangements and in Section IV on results and partnerships of the UNDP Project Document.

The following table provides an overview of initiatives with which the CBIT project will coordinate.

**Table 4. Baseline Projects and Initiatives**

Initiative	Donor	Key implementin g partner	Time fra me	Main activities of the project and description of the complementarity and coordina tion approach with CBIT to avoid overlaps and exploit synergies
				<b>Main activities of the project related to the CBIT:</b>  Update national GHG inventory for 2014-15 and revision of 2000-13 inventories  Development of selected Tier 2 emission factors (agriculture)  Capacity building on IPCC 2006 methodologies and geospatial analysis  Domestic MRV systems (sectoral)

Biennial Update Report (BUR-1)	GEF-financed, UN Environment-implemented	MoESWMCC	2017-2020	<p><b>Complementarity and coordination between projects:</b></p> <p>The long-term approach of the CBIT is complementary to the BUR/NC projects, whose primary objective is to develop the reports following the BUR and NC reporting guidelines. The CBIT project will make use of the already existing NCs/BURs Project Management Unit, which is hosted by the Climate Change Unit, for the management of the project. Having the same PMU ensures a full coordination of BUR/NC projects under the GEF and the CBIT project. This arrangement ensures a full coordination between projects. The PMU participated in the design of the CBIT project and also participates in the BUR/NC projects financed by the GEF, avoiding duplication of efforts and exploiting synergies. <b>Output 2.1. of the CBIT project will build from the progress made in the BUR project related to MRV activities.</b></p>
Fourth National Communication (FNC)	GEF-financed, UN Environment implemented	Ministry of Environment, Solid Waste Management and Climate Change (CCD)	2020-2024	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Conduct a National Greenhouse Gas Inventories as well as update the GHG inventory figures from the first BUR. Capacity Building on the 2006 IPCC Inventory Guidelines and Software</p> <p><b>Complementarity and coordination between projects:</b></p> <p>The long-term approach of the CBIT is complementary to the BUR/NC projects, whose primary objective is to develop the reports following the BUR and NC reporting guidelines. The CBIT project will make use of the already existing NCs/BURs Project Management Unit, which is hosted by the Climate Change Unit, for the management of the project. Having the same PMU ensures a full coordination of BUR/NC projects under the GEF and the CBIT project. This arrangement ensures a full coordination between projects. The PMU participated in the design of the CBIT project and also participates in the BUR/NC projects financed by the GEF, avoiding duplication of efforts and exploiting synergies.</p>
Review and update of the NDC (NDC-2)	Government of France	MoESWMCC	2019-2020	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Update NDC target</p> <p>Development of a proposal for a domestic MRV system <b>for NDC tracking.</b></p> <p>Mechanism for assessing the carbon footprint of implemented measures</p> <p><b>Complementarity and coordination between projects:</b></p> <p><b>The NDC-2 project will specifically address the MRV for the NDC, considering the indicators required for NDC tracking and the arrangements needed for the future update of the NDC (to be done every five years). The proposal of MRV for the NDC</b></p>

				will involve links with the GHG emission inventory, mitigation, and support components, which will be addressed under the CBIT project. The CBIT project will consider the inputs from the NDC-2 project to make a proposal of integrated MRV for all the components needed under the ETF (GHG emission inventories, mitigation, support and NDC tracking).
NAMAs for low-carbon island development strategy	GEF-financed, UN Environment-implemented	MoESWMCC	2017-2021	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Strengthened national capability to identify, prioritise and develop mitigation actions to meet NDC targets</p> <p>Initiate implementation actions on renewable energy targets</p> <p>MRV system for the electricity sector and to track NDC implementation for renewable energy actions</p> <p><b>Complementarity and coordination between projects:</b></p> <p>The new emission factors developed under outputs 1.1 -1.3. will facilitate the assessment, prioritization and development of mitigation actions in the energy sector. The capacity building exercises under outcomes 1.1. – 1.3. will consider the capacity building already provided under the NAMA, to ensure the capacity building is complementary. Further, the NAMA will consider that tier2-tier 3 EF are being developed under the CBIT, so the MRV system for the electricity sector also cover them. Output 2.1 will be built from the developments on the sectoral MRV system developed under the NAMA project.</p> <p>The coordination will be ensured by the PMU under the MoESWMCC, which is also the implementing agency for the NAMA.</p>
Shared Environmental Information System (SEIS)	UNEP	MoESWMCC	2017-2019	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Development of an Indicator Reporting Information System (IRIS) to help the Ministry and Statistics Mauritius to collect, analyse and publish quality information in a timely manner</p> <p>For reporting on MEAs, SDGs and integrated environmental assessment processes</p> <p><b>Complementarity and coordination between projects:</b></p> <p>The developments under output 3.2., which will be developed together with the IT stakeholders (mainly the Central Informatics Bureau and the Central Information S</p>

				<p>systems Division), will build from the existent systems and developments to strengthen the Climate Change Information Centre (CCIC) as a transparency portal. The CCIC and the PMU have already engaged with the IT stakeholders during the PPG phase, and this coordination will be extended during the CBIT project implementation. The GEF project will also support MoESWMCC and Statistics Mauritius, in the context of the baseline Shared Environmental Information System (SEIS) project, to link the SEIS Indicator Reporting Information System (IRIS) to the CCIC, such that inventory data can be 'pulled' from the CCIC and displayed in IRIS on an ongoing basis.</p>
Realising energy savings and climate benefits of implementing mandatory energy auditing the Republic of Mauritius	GEF-financed, UNDP-implemented (At CEO Endorsement stage)	Energy Efficiency Management Office (EEMO) within the Ministry of Energy and Public Utilities	2019-2024	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Enhancement of the national mandatory energy audit programme</p> <p>Implementation of boiler and RAC energy efficiency recommendations for large energy consumers and the promotion of energy efficient, low-GWP refrigerants</p> <p>Provision of credit line for the implementation of energy audit recommendations</p> <p>Implementation of energy management and energy MRV systems in large energy consumers and SMEs</p> <p><b>Complementarity and coordination between projects:</b></p> <p>The MRV system developed in the energy savings project shall be considered under the overarching domestic MRV system which is addressed under the NDC-2 and the CBIT project. The presence of the Ministry of Energy and Public Utilities in the project board of the CBIT and the overall coordination of the MoESWMCC will ensure the complementarity and the coordination of efforts.</p>
Accelerating the transformational shift to a low-carbon economy in the Republic of Mauritius	GCF-financed, UNDP-implemented	Ministry of Finance and Economic Development (NDA of the GCF)	2017-2024	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Institutional strengthening for renewable energy (MARENA)</p> <p>Installation of battery energy storage system and accompanying software for the national grid to absorb up to 185 MW of intermittent renewable energy 25 MW of rooftop PV installed</p> <p><b>Complementarity and coordination between projects:</b></p> <p>MARENA's involvement in the CBIT is in line with the objectives of the GCF and national priorities. Specifically, MARENA is targeted as one of the key stakeholders to participate in the capacity building exercises under outputs 1.1. -1.4. of the CBIT. T</p>

				<p>his capacity is additional to the training activities developed under the GCF project. Further, MARENA is part of the technical committee on energy (see further information on section VII on governance arrangements) and has been consulted under the PPG phase on the structure of the CBIT. Furthermore, the NDA of the GCF, the Ministry of Finance and Economic Development, will be involved in the project board of the CBIT project, for ensuring complementarity and coordination.</p>
Transforming the tourism value chain in developing countries and SIDS	International Climate Initiative (IKI)-financed, UN Environment-implemented	Ministry of Tourism & External Communications - Mauritius	2017-2020	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Develop a national action plan to reduce GHG emissions and improve resource efficiency in selected tourism value chains</p> <p>Identification of key emissions sources and potential mitigation interventions in hotels</p> <p>Technical capacity building workshops for hotels</p> <p><b>Complementarity and coordination between projects:</b></p> <p>The information generated under the CBIT project will be disseminated to a wider audience so the emission factors and improved GHG emission inventory can be used by all national stakeholders. A specific component has been to the CBIT regarding dissemination of results (component 4). There are no overlaps on the scope of the projects.</p>
Promoting the low-carbon transport sector in the Republic of Mauritius	GEF-financed, UNDP-implemented  <i>PPG ongoing – PIF approved in December 2020</i>	Ministry of Public Infrastructure and Land Transport (MPILT),  Ministry of Energy and Public Utilities  National Land Transport Authority (NLTA)  National Transport Corporation (NTC)	2020-2025	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Promote capital investments into developing sustainable transport infrastructure (electric buses) to reduce transport-related GHG emissions</p> <p>Engage and build technical capacities of transport-related policy-makers, regulatory agencies, financial institutions and the private sector</p> <p><b>Complementarity and coordination between projects:</b></p> <p>Transport stakeholders are involved in the CBIT project in the transport Technical Committee, in which the National Land Transport Authority is the chair. Further, the Ministry of Energy and public utilities is the chair of the energy technical Committee. The coordination of efforts between projects is thus ensured through the participation of these two key stakeholders in both projects. The use of the inventory for</p>

		<p>Trac Management and Road Safety Unit (TMRSU)</p> <p>Private Bus Companies</p>		<p>the development of transport mitigation actions will be included under the capacity building activities of output 1.4. Transport stakeholders are targeted as key stakeholders to participate in the capacity building exercises this output. The CBIT project will contribute to enhance the capacity of transport-related institutions, but in a different scope than the low carbon sector project. The two projects are fully complementary, and the coordination is ensured.</p>
<p>Mainstreaming sustainable land management and biodiversity conservation in the Republic of Mauritius</p>	<p>GEF-financed, UNDP-implemented</p>	<p>Ministry of Agro-Industry and Food Security</p>	<p>Pending approval-2023</p>	<p><b>Main activities of the project related to the CBIT:</b></p> <p>Strengthen the policy and institutional framework for the promotion of SLM, including integration of LDN targets into sector policies</p> <p>Develop an Integrated Land Information System as a decision support tool</p> <p>Capacity development on carbon balance software tools (including Collect Earth, EX-ACT and WOCAT methodologies)</p> <p>Landscape-scale terrestrial ecosystem and land-use assessment (including development of thematic maps) – for ecosystems, forests, agricultural and livestock productivity, and degraded land</p> <p>Planting and restoration of forestland, riverine and mountain reserves and agricultural land</p> <p>Gender mainstreaming in project activities</p> <p><b>Complementarity and coordination between projects:</b></p> <p>The improvement of the forest inventory and the AFOLU estimates of the inventory under the CBIT project will facilitate the development of this project, as better national data will ease land-use and territorial assessments as well as policy making. No overlaps are identified between projects. The ministry of Agro-industry is the chair of the AFOLU technical Committee for the governance of the CBIT project, so the avoidance of overlaps and coordination of efforts is ensured.</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.

**National Communication (NC) under UNFCCC:** The project responds to, and is supportive, of the National Communication process. The project design directly responds to inventory deficiencies identified in the Third National Communication and the latest National Greenhouse Gas Inventory Report. For example, the Inventory Report states (p.141): "It is recommended that, during the development of future BURs and NCs, the methodology is improved further, taking into account the development of national emissions factors in key sectors for GHG emissions and use of data from emissions monitoring systems. In addition, the development of a sustainable national inventory system, involving key organisations, in the regular update and improvement of the GHG inventory, should be established."

**Biennial Update Report (BUR) under UNFCCC:** The first BUR is currently under development. The improvements to the national GHG inventory supported by the GEF project will benefit future BURs.

**Nationally Determined Contribution (NDC) under the Paris Agreement:** The improvements to GHG accounting brought about by the GEF project will enable more accurate tracking of national and sectoral GHG emissions and will, therefore, facilitate comparisons between actual emissions and emission targets, thereby enabling corrective policy actions to be adopted as and when necessary.

**National Climate Change Adaptation Policy Framework (2012):** The key objectives of this framework are to foster the development of policies, strategies, plans and processes to avoid, minimise and adapt to the negative impacts of climate change on the key sectors and to avoid or reduce damage to human settlements and infrastructure and loss of lives caused by climate change. Besides, the framework aims to integrate and mainstream climate change into core development policies, strategies and plans of Mauritius. Even though the CBIT project is focused on mitigation, the activities of the CBIT project are in line with this policy framework; the improvements in the CCIC that will be carried out in the CBIT project will contribute to achieve its objectives.

**Technology Needs Assessment (TNA) under UNFCCC:** The TNA (2012) identifies one priority mitigation sector (Energy Industries) and three priority adaptation sectors (Water, Agriculture and Coastal Zone). The GEF project directly supports two of these (Energy Industries – locally-calibrated emission factors, and Agriculture – livestock emission factor).

**National Capacity Self-Assessment (NCSA) under UNCBD, UNFCCC, UNCCD:** The NCSA (2005) identified priority issues that are addressed by the GEF project. These include:

Biodiversity: incomplete forest inventory.

Climate change: use of renewable energy and energy efficiency; and the need for improved data management in the transport sector.

Land degradation: clearing/conversion of forest on privately held land; and an unsustainable livestock production 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.**

The CBIT project will build from the results of the projects previously developed and under implementation in the country. The PMU of the CBIT project will work under the MoESWMCC, which serves as the UNFCCC Focal Point and coordinates Mauritius's actions on climate change and oversee directly or indirectly all climate change projects implemented in Mauritius. The involvement of the MoESWMCC in the project will allow the information flow between projects. The complementarity and coordination between projects are further specified in table 5 in pages 46-50 of the CEO endorsement request

The core focus of transparency is the exchange of climate change-related information and knowledge. At the country level, this includes enhanced coordination among existing databases of ministries, agencies, and individual projects, collect and manage climate change data. Within Mauritius, this project adopts three core knowledge management approaches.

First, under Output 2.2, the project will establish an IT system for simplifying and streamlining the inventory data collection process. This IT system, that will be built from existent systems and managed by the CCD in collaboration with Mauritius Statistics, will serve as a coordination medium between data providers, data aggregators, and inventory compilers. It will also act as a back-end archiving system maintaining disaggregated wealth of country level information. Provision of training for all stakeholders involved in the inventory will ensure that a cadre of trained experts will manage the knowledge sharing process and sustain this in the future as well.

Second, under output 3.2., the online Climate Change Information Centre (CCIC) will be enhanced to act as a centralized information center related to climate change, aiming at improving the transparency of the climate change action of the country and the awareness of its citizens related to climate change risks and impacts.

Third, under output 4.2, the project will promote a knowledge-sharing culture through information dissemination activities and through sharing lessons learned at the regional and international level. The whole project will be documented to share good practices with third countries implementing climate change MRV systems.

The implementation of these three approaches will enable Mauritius to enhance its climate-related knowledge management, particularly related to the preparation of the national GHG emissions inventory. The current ad hoc and rather informal process will be updated through the implementation of an IT system that will serve as a coordination mechanism and a back-end archiving system, complemented by the enhancement of the CCIC as a climate change centralized information center. All the data used for the preparation of the inventory in the IT system will be stored systematically, ensuring the sustainability of the inventory, and allowing future potential recalculations. Furthermore, the capacity building exercises developed within the CBIT will be document in manuals to make sure they can be used beyond project implementation. This will allow future government staff to improve their skills and carry out the corresponding capacity building exercises. Additionally, the CCIC will be consider for its use as a repository of capacity building exercises developed in the country, easing the capacitation of future governmental staff.

Finally, the project will undertake systematic documentation of project guidance, approaches, technical documentation, curricula, and other knowledge products.

There will be a two-way flow of information between this project and other GEF-funded projects (locally and globally). The project will provide information on a regular basis to GEF-funded global initiatives, such as the Global Support Programme for National Communications and Biennial Update Reports and the CBIT Global Coordination Platform and subsequent initiatives in these areas. The project will also identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned.

The table below provides an overview of key knowledge products by project component, including the timeline for their delivery.

**Table 5. Key Knowledge Products and Timeline for Delivery**

<i>Project Component 1</i>	· Work plans for the development of tier 2/tier 3 emission factors	<i>Work plans : Y1</i>
	· Documentation of tier 2/tier 3 emission factors	<i>Documentation: Y3</i>
	· Workshop reports for the capacity building exercises developed under component 1	<i>Capacity building: Y1-Y4</i>
<i>Project Component 2</i>	· Proposal of MRV system	<i>MRV system: Y2-3</i>
	· IT system (set of Excel workbooks for inventory compilation) in place	<i>IT system: Y3</i>
<i>Project Component 3</i>	· Workshop reports for the capacity building exercises developed under component 3	<i>Workshop reports: Y4</i>
	· Meeting minutes for the coordination of the CCIC improvement	<i>Meeting minutes: Y1</i>
<i>Project component 4: M&amp;E</i>	· Inception report, Project Implementation Reports, terminal evaluation	<i>M&amp;E reports: see Section 9 of the CEO endorsement request and Annex 3 of the accompanying UNDP ProDoc</i>
	· Reports on training participation by gender and gender mainstreaming in other activities, including website usage.	
<i>Project Management</i>	· Final Report, summary of achievements	<i>Report/summary: Y4</i>
	· Lessons learnt from the CBIT project in Mauritius	<i>Report on Lessons Learnt: Y4</i>

The implementation of the CBIT project will bring best practices on the development of advanced Tier emission factors, essential for achieving national specific emission inventories. The process of development of emission factors and the results will be documented in a knowledge management product on lessons learnt, which could be used as a reference by third countries. The emission factors developed will be also uploaded into the IPCC emission factor database, allowing its use by countries with similar emitting characteristics. To present opportunities for replication in other countries, the project will codify good practices and facilitate dissemination through global ongoing South-South and global platforms, such as the CBIT Global Platform, the UN South-South Galaxy knowledge sharing platform, and PANORAMA<sup>[1]</sup>.

In addition, to bring the voice of Mauritius to global and regional fora, the project will explore opportunities for meaningful participation in specific events where UNDP could support engagement with the global development discourse on transparency-related issues. The project will furthermore provide opportunities for regional cooperation with countries that are implementing CBIT initiatives in geopolitical, social and environmental contexts relevant to the proposed project in Mauritius.

## 9. Monitoring and Evaluation

### Describe the budgeted M and E plan

The project results, corresponding indicators and mid-term and end-of-project targets in the project results framework will be monitored annually and evaluated periodically during project implementation. If baseline data for some of the results indicators is not yet available, it will be collected during the first year of project implementation. The Monitoring Plan included in Annex 3 details the roles, responsibilities, frequency of monitoring project results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. The UNDP Country Office is responsible for ensuring full compliance with all UNDP project monitoring, quality assurance, risk management, and evaluation requirements.

Additional monitoring reports:

**Inception Workshop and Report:** A project inception workshop will be held within 60 days of project CEO endorsement, with the aim to:

- Familiarize key stakeholders with the detailed project strategy and discuss any changes that may have taken place in the overall context since the project idea was initially conceptualized that may influence its strategy and implementation.
- Discuss the roles and responsibilities of the project team, including reporting lines, stakeholder engagement strategies and conflict resolution mechanisms.
- Review the results framework and monitoring plan.
- Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP and other stakeholders in project-level M&E.
- Update and review responsibilities for monitoring project strategies, including the risk log; SESP report, Social and Environmental Management Framework and other safeguard requirements; project grievance mechanisms; gender strategy; knowledge management strategy, and other relevant management strategies.
- Review financial reporting procedures and budget monitoring and other mandatory requirements and agree on the arrangements for the annual audit.
- Plan and schedule Project Board meetings and finalize the first-year annual work plan.
- Formally launch the Project.

### GEF Project Implementation Report (PIR):

The annual GEF PIR covering the reporting period July (previous year) to June (current year) will be completed for each year of project implementation. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR. The PIR submitted to the GEF will be shared with the Project Board. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

Biennial evaluation: this project does not include a mid-term review. However, an evaluation will be carried out after two years since the start of the project to analyse progress and take corrective measures, if appropriate. Status Survey Questionnaires will be used, in line with GEF and UNFCCC reporting requirements for NCs and BURs.

### Terminal Evaluation (TE):

An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the [UNDP Evaluation Resource Center](#).

The evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired by UNDP evaluation specialists to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the consultants should not be in a position where there may be the possibility of future contracts regarding the project being evaluated.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate.

The final TE report and TE TOR will be publicly available in English and posted on the UNDP ERC **by November 2024**. A management response to the TE recommendations will be posted to the ERC within six weeks of the TE report's completion.

#### Final Report:

The project's terminal GEF PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Monitoring and Evaluation Plan and Budget:			
GEF M&E requirements	Responsible Parties	Indicative costs (US\$)	Time frame
Inception Workshop	UNDP country Office/ <b>Project Management Unit</b>	USD 3,000 <b>[1]</b>	Within 60 days of CEO endorsement of this project.
Inception Report	Project Manager	None	Within 90 days of CEO endorsement of this project.
Monitoring of indicators in project results framework	Project Manager and project assistant	USD 5,500	Annually prior to GEF PIR. This will include GEF core indicators.
GEF Project Implementation Report (PIR)	Project Manager, UNDP Country Office and RTA	None	Annually typically between June-August
Monitoring all risks (UNDP risk register)	UNDP Country Office Project Manager	USD 2,900	On-going.
Monitoring of stakeholder engagement plan	Project Manager	None	On-going.

<b>Engagement Plan</b>	<i>M&amp;E expert</i>		
<b>Monitoring of gender action plan</b>	Project Gender Officer	None	On-going.
<b>Supervision missions</b>	UNDP Country Office	None <sup>[2]</sup>	Annually
<b>Oversight missions</b>	RTA and BPPS/GEF	None	Troubleshooting as needed
<b>Biennial evaluation</b>	Project Manager <i>M&amp;E expert</i>	<i>USD 8,000</i>	<b>November 2022</b>
<b>Biennial progress of GEF and/or LDCF Core indicators and METT or other required Tracking Tools</b>	Project manager	<i>None</i>	<i>Biennially</i>
<b>Terminal GEF and/or LDCF/SCCF Core indicators and METT or other required Tracking Tools</b>	Project Manager	<i>None</i>	Before terminal evaluation mission takes place
<b>Independent Terminal Evaluation (TE)</b>	Independent evaluator <i>M&amp;E expert</i>	USD 21,000	<b>November 2024</b>
<b>TOTAL <u>indicative</u> COST</b>		<i>USD 40,400</i>	

<sup>[1]</sup> The costs of UNDP CO and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.

## 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 (LDCF/SCCF)?**

The project is aligned with GEF focal area CCM-3-8, i.e. "Foster enabling conditions for mainstreaming mitigation concerns into sustainable development strategies through capacity building initiative for transparency."

The project will contribute to the improvement of local and global environmental conditions through enhancing transparency related to GHG emissions, impacts of climate change, and mitigation and adaptation actions in the country. Strengthened MRV will allow the government to better assess investments in mitigation and adaptation measures, and may result in more efficient expenditures on climate-related activities, which in turn could optimize reductions in GHG emissions. Improved MRV will also allow the government to compare the relative costs and benefits of mitigation and adaptation measures so that it will be able to highlight and support cost-effective, high-impact adaptation measures.

This project contributes to the country's commitments under the UNFCCC to enable it to address climate change considerations (mitigation of GHG emissions and reduction of vulnerability to climate change). project activities contribute directly to increasing the extent to which state institutions base their actions on the principals of sustainable development and increasing the capacities of public actors to implement, monitor, and evaluate policies related to environment, climate change and nature protection. The enhanced MRV system to be proposed under Component 2 is designed to avoid duplication and result in an efficient system that will reduce time burdens and costs to state institutions in data collection and analysis.

The project will also assist the country in achieving the SDG 13 by supporting the integration of climate change measures into national policies, strategies and planning; building knowledge and improving education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning, and promotion of mechanisms for raising capacity for effective climate change-related planning and management in the country. The project will also contribute to achieving SDG5 by supporting empowerment of women in decision-making, land ownership and through gender-sensitive budgeting.

## 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
Low			

#### 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.

CBIT projects are exempted from SESP screening.

#### Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
6433 CBIT Mauritius SESP exempt justification	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).**

<b>This project will contribute to the following Sustainable Development Goal (s):</b> <i>SDG 13: Climate Action</i>
<b>This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD):</b> UNSPF Outcome 6 Resilience to climate change. UN SPF 2019 – 2023: By 2023, integrated policy frameworks and enhanced community action shall promote climate and disaster resilience and biodiversity protection, and create incentives for the transition to renewable energy
UNDP CPD Outcome 2: Design and implementation of a portfolio of activities and solutions developed at national and subnational levels for sustainable management of natural resources, integration of ecosystem services approaches, sound management of chemicals and waste, while ensuring that climate change challenges in terms of adaptation and mitigation are fully addressed

	<b>Objective and Outcome Indicators (no more than a total of 20 indicators)</b>	<b>Baseline[1]</b>	<b>Mid-term Target</b>	<b>End of Project Target</b>
<b>Project Objective:</b>  To assist the Republic of Mauritius in strengthening its national greenhouse gas inventory and associated data collection process, and to mainstream greater use of the inventory in policy formulation and NDC tracking	<u>Indicator 1</u> : direct project beneficiaries disaggregated by sex (individual people)	0	60 direct beneficiaries, of whom 30 are women	120 direct beneficiaries, of whom at least 60 are women
	<u>Indicator 2</u> (Indicator 3 of CBIT tracking to ol): Quality of MRV Systems*	3	6	9
	<u>Indicator 3</u> (Indicator 4 of CBIT tracking to ol): Meeting Convention reporting requirements and including mitigation contributions	Initial NDC, Initial, Second, Third and Fourth National Communications; and First BURs submitted to the UNFCCC	Updated NDC submitted by the Government	The First Biennial Transparency Report submitted to the UNFCCC
	<u>Indicator 4</u> (Indicator 5 of CBIT tracking to ol): Qualitative assessment of institutional capacity for transparency-related activities**	2	3	4
<b>Project component 1</b>	<b>Improving the accuracy and localisation of the national greenhouse gas inventory</b>			
<b>Project Outcome[2] 1.1</b>  Key Category sectors benefited	<u>Indicator 5</u> : Number of IPCC sub-categories (among sub-categories 1A1, 1A2, 1A3, 1		At least one IPCC category (among sub-categories	At least five IPCC sub-categories (among sub-categories 1

Benefit from locally-calibrated emission factors and/or activity data, enabling the inventory to advance to Tier 2 or Tier 3 GHG estimation approaches	A4, 1A5, 3A1 and 3B1) using an advanced Tier approach (Tier 2 or Tier 3) in the national emission inventory.	0	es 1A1, 1A2, 1A3, 1A4, 1A5, 3A1 and 3B1) use a Tier 2/Tier 3 approach in the national GHG emissions inventory.	A1, 1A2, 1A3, 1A4, 1A5, 3A1 and 3B1) use a Tier 2/Tier 3 approach in the national GHG emissions inventory.
	<u>Indicator 6</u> : Number of national experts trained on 2006 IPCC methodologies and on the development of advanced Tier approaches.	0	At least 20 experts have been trained on 2006 IPCC methodologies.	At least 60 experts (out of which at least 50%, i.e. 30 experts will be women) have been trained on 2006 IPCC methodologies
<b>Outputs to achieve under Outcome 1.1</b>	<p>1.1 Development of Tier 2 emission factors for key fuels: coal, heavy fuel oil, gasoline, diesel, kerosene and liquefied petroleum gas – for application in Energy Industries, Transport, Manufacturing Industry and Construction, and Energy Other Sectors</p> <p>1.2 Development of Tier 3 emission factors for Mauritius's 8 thermal power plants and a real-time grid emission factor – for application in Energy Industries and (increasingly) Transport</p> <p>1.3 Development of Tier 2 activity data for Mauritius's land transport sector (road, Metro), augmented by gender and socio-economic usage data</p> <p>1.4 Development of Tier 2 enteric fermentation emission factors and model for livestock</p> <p>1.5 Development of Tier 2 allometric equations, root-to-shoot ratios and carbon densities for 4 key tree species in the Mauritian context</p> <p>1.6 Ground-truthed forest inventory of privately held forestland and non-forest tree cover (e.g. along river banks and roadsides)</p>			
<b>Project component 2</b>	<b>Strengthening the national greenhouse gas inventory process</b>			
<b>Outcome 2.1</b>  Reduced burden (time, cost) on institutions supplying data to the national greenhouse gas inventory	<u>Indicator 7</u> : Presence of institutional arrangements for a national transparency framework	There are currently no formal institutional arrangements for a national transparency framework. The roles and responsibilities of the entities involved/to be involved in the MRV system are not defined.	An Analysis of the existing legal framework, competences, staffing and budgets as they relate to climate MRV of the key entities involved in the MRV system is available.	By the end of the project, Mauritius will have a roadmap for the implementation of an enhanced institutional architecture for its MRV system.
	<u>Indicator 8</u> : Progress in the development of an Excel-based system that is being used	Data are currently collected on an ad hoc,	A first draft of the Excel template base model (i.	By the end of the project, an Excel template-based model

	for continuous data collection and reporting to the UNFCCC.	project-by-project basis	e. a first draft of each of the four sectoral excel templates) is available.	for data collection, processing and submission is operational and used for the collection of data for the estimation of the national GHG emissions inventory.
<b>Outputs to achieve under Outcome 2.1</b>	2.1 Implemented government roadmap for a permanent MRV structure, including firm government financing and institutional commitments  2.2 Development of an IT-based system to simplify and streamline the inventory data collection process			
<b>Project component 3</b>	<b>Mainstreaming the national greenhouse gas inventory to enhance transparency and support policy-making</b>			
<b>Outcome 3.1</b>  Enhanced policy-relevance of the national greenhouse gas inventory, transitioning from a periodic UNFCCC obligation to a useful policy tool	<u>Indicator 9:</u> Number of experts trained on the use of the IT based system for inventory preparation.	0	At least 15 experts have been trained on the use of the IT system.	At least 20 experts (out of which 10 will be women) have been trained on the use of the IT system.
<b>Outputs to achieve under Outcome 3.1</b>	<i>3.1 Targeted training on the use of the new IT-based system and on the use of the inventory for policy formulation, target-setting, scenario analysis and MRV of NDC commitments</i>  <i>3.2 Enhancing the role of the Climate Change Information Centre (CCIC) as a transparency portal</i>			
<b>Project component 4</b>	<b>Monitoring and Evaluation and Knowledge Management</b>			
<b>Outcome 4.1</b>	<u>Indicator 10:</u> Dissemination of good practices and lessons learned.	Not applicable	Two blog articles on good practices and lessons learnt. One of the articles shall be focused on gender mainstreaming.	Three blog articles on good practices and lessons learnt. One of the articles shall be focused on gender mainstreaming, and at least one article shall be focused on best practices for GHG emission inventories.  A report on lessons learnt of the CBIT project in Mauritius will be published and shared in the CBIT Global Platform.

<b>Outputs to achieve under Outcome 4.1</b>	<i>4.1 Project results and outcomes monitored and evaluated</i>  <i>4.2 Lessons learned, and best practices shared with other Parties through the Global Coordination Platform and other cooperation networks</i>
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\*Guidance for Ratings for indicator 2 (scale 1-10):

1. Very little measurement is done; reporting is partial and irregular, and verification is not there
2. Measurement systems are in place, but data is of poor quality and/or methodologies are not very robust; reporting is done only on request or to limited audience or partially; verification is not there
3. Measurement systems are in place for a few activities, improved data quality and methodologies, but not cost or time efficient; wider access to reporting is still limited and information is partial; verification is rudimentary/non-standardized
4. Measurement systems are strong in a limited set of activities however; analyses still need improvement; periodic monitoring and reporting although not yet cost/time efficient; verification is only upon specific request and limited
5. Measurement systems are strong for a limited set of activities and periodically report on key GHG related indicators i.e. mainstreamed into the activity implementation; reporting is improved through few pathways but limited audience and formats; verification limited
6. Measurement systems are strong and cover a greater percentage of activities – feedback loops exist even if they are not fully functioning; reporting is available through multiple pathways and formats but may not be complete/transparent; verification is done through standard methodologies but only partially (i.e. not all data is verifiable)
7. Measurement regarding GHG is broadly done (with widely acceptable methodologies), need for more sophisticated analyses to improve policy; Reporting is periodic with improvements in transparency; verification is done through more sophisticated methods even if partially
8. Strong standardized measurements processes established for key indicators and mainstreamed into institutional policy implementation; reporting is widely available in multiple formats; verification is done for a larger set of information
9. Strong Monitoring and Reporting systems – robust methodologies, cost effective and efficient, periodic; verification done to a significant degree
10. Strong MRV systems that provide quality GHG related information in a transparent, accurate and accessible to a wide audience, with feedback of information from MRV flowing into policy design and implementation

\*\*Guidance for Ratings for indicator 4 (scale 1-4):

1. No designated transparency institution to support and coordinate the planning and implementation of transparency activities under Article 13 of the Paris Agreement exists.
2. Designated transparency institution exists, but with limited staff and capacity to support and coordinate implementation of transparency activities under Article 13 of Paris Agreement. Institution lacks authority or mandate to coordinate transparency activities under Article 13.

3. Designated transparency institution has an organizational unit with standing staff with some capacity to coordinate and implement transparency activities under Article 13 of the Paris Agreement. Institution has authority or mandate to coordinate

transparency activities under Article 13. Activities are not integrated into national planning or budgeting activities.

4. Designated transparency institution(s) has an organizational unit with standing staff with some capacity to coordinate and implement transparency activities. Institution(s) has clear mandate or authority to coordinate activities under Article 13 of the Paris Agreement, and activities are integrated into national planning and budgeting activities

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*[1] Baseline, mid-term and end of project target levels must be expressed in the same neutral unit of analysis as the corresponding indicator. Baseline is the current/original status or condition and needs to be quantified. The baseline can be zero when appropriate given the project has not started. The baseline must be established before the project document is submitted to the GEF for final approval. The baseline values will be used to measure the success of the project through implementation monitoring and evaluation.*

*[2] Outcomes are medium term results that the project makes a contribution towards, and that are designed to help achieve the longer-term objective. Achievement of outcomes will be influenced both by project outputs and additional factors that may be outside the direct control of the project.*

## **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).**

No comments have been received.

## **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\$ 50,000			
<i>Project Preparation Activities Implemented</i>	<i>GEF Amount (\$)</i>		
	<i>Budgeted amount</i>	<i>Amount spent to date</i>	<i>Amount committed</i>
Finalize the UNDP-GEF project document: "Strengthening the national greenhouse gas inventory of the Republic of Mauritius to improve climate reporting and transparency"	50,000	47,734	2,263
<b>Total</b>	<b>50,000.00</b>	<b>47,734</b>	<b>2,263</b>

## ANNEX D: Project Map(s) and Coordinates

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



ANNEX E: Project Budget Table

Please attach a project budget table.

GEF Budget Table

		Component (USDeq.)						Total (U	Responsible E ntity
		Comp	Compon	Comp					(Executing Ent ity receiving fu nds from the

Expenditure Category	Detailed Description	onent 1	onent 2	onent 3	Sub-T otal	M&E	PMC	SDeq.)	GEF Agency) [1]
		Sub-co mpone nt 1.1	Sub-com ponent 2. 1	Sub-co mpone nt 3.1					
Goods	Information Technology equipment						3,050	3,050	MoESWMCC
Contractual Services – Individual	Support for Project Manager (6 months; 3,500 USD/month) and Project Assistant (36 months; 1,800 USD/month) salaries; The cost of the technical work is distributed among technical components while PM work is budgeted and will be charged to PM U cost.						85,800	85,800	MoESWMCC
Contractual Services – Company	One contract by output for carrying out the technical activities defined (see activities defined in section IV and/or annex 6. Overview of technical consultancies)	564,200			564,200			564,200	MoESWMCC
Contractual Services – Company	One contract for carrying out the technical activities defined for output 2.1 (see activities defined in section IV and/or annex 6. Overview of technical consultancies)		51,100		51,100			51,100	MoESWMCC
International Consultants	International independent consultant for terminal evaluation (21,000 USD; lumpsum)					21,000		21,000	MoESWMCC
	Specialist on GHG emissions from the energy sector for output 1.1. Development of Tier 2 emission factors for key fuels (150 days; 250 USD/day) Specialist on GHG emissions from electricity production for output 1.2 Development of Tier 3 emission factors for thermal power plants (150 days; 250 USD/day) Specialist on GHG emissions from transport for output 1.3 Development of Tier 2 activity data for land transport sector (150 days; 250 USD/day) Specialist on GHG emissions from the agriculture sector for output 1.4 Development of Tier 2 enteric fermentation emission f								



Local Consultants	<p>Local Tier 2 enteric fermentation emission factors for livestock (200 days; 250 USD/day)</p> <p>Specialist on GHG emissions from the Forestry and Land Use sector for output 1.6 Forest inventory of forestland and non-forest tree cover (250 days; 250 USD/day)</p> <p>National consultant to support project coordination, coordination of stakeholders for the development of advanced tiers in outputs 1.1-1.6; assistance in data collection; quality assurance of the reports and relevant results; ensure that the results are in line with national circumstances; assist the project manager in project implementation and in the development of project reports; biennial evaluation. (26 months; 3,500 USD/month)</p> <p>Gender specialist (6 weeks; 800 USD/week)</p>	320,800			320,800			320,800	MoESWMCC
Local Consultants	<p>Specialist on climate change MRV systems for output 2.1 (45 days; 250 USD/day)</p> <p>Specialist on GHG emission inventories with experience in Mauritius for output 2.2 (165 days; 250 USD/day)</p> <p>National consultant to support project coordination, coordination of stakeholders for the development of advanced tiers in outputs 2.1-2.2; assistance in data collection; quality assurance of the reports and relevant results; ensure that the results are in line with national circumstances; assist the project manager in project implementation and in the development of project reports; biennial evaluation. (6 months; USD 3,500/month)</p> <p>Local gender specialist (2 weeks; USD 800/week)</p>		75,100		75,100			75,100	MoESWMCC
	Specialist on GHG emission inventories with experience in Mauritius for output 2.2								

<b>Local Consultants</b>	th experience in Mauritius for output 3.1 (40 days; 250 USD/day) National consultant to support project coordination, coordination of stakeholders for the development of advanced tiers in outputs 3.1-3.2; assistance in data collection; quality assurance of the reports and relevant results; ensure that the results are in line with national circumstances; assist the project manager in project implementation and in the development of project reports; biennial evaluation (66 days; 250 USD/day). IT specialist for output 3.2 (180 days; 250 USD/day)			71,500	71,500			71,500	MoESWMCC
<b>Local Consultants</b>	National consultant for biennial evaluation (2,000 USD; lumpsum) National consultant to support project coordination, terminal evaluation, monitoring activities, and supporting the development of dissemination products (4 months; 3,500 USD/month)					16,000		16,000	MoESWMCC
<b>Trainings, Workshops, Meetings</b>	Meetings for discussing the methodological approach to follow under each output. Validation meetings. Capacity building workshops on 2006 IPCC methodologies and on the development of advanced Tier approaches	14,000			14,000			14,000	MoESWMCC
<b>Trainings, Workshops, Meetings</b>	Meetings for discussing the methodological approach to follow and coordination meeting under each output. Validation meetings		5,000		5,000			5,000	MoESWMCC
<b>Trainings, Workshops, Meetings</b>	Meetings for discussing the methodological approach to follow and coordination meeting under each output. Validation meetings			6,000	6,000			6,000	MoESWMCC
<b>Trainings, Workshops, Meetings</b>	Project inception workshop and validation workshop					3,000		3,000	MoESWMCC
	...								MoESWMCC

<b>Travel</b>	Travel expenses to attend relevant worksh ops.	4,000			4,000			4,000	<i>MoESWMCC</i>
<b>Travel</b>	Travel expenses to attend relevant worksh ops. Travel and DSA of international cons ultant		3,400		3,400			3,400	<i>MoESWMCC</i>
<b>Other Operating Cost s</b>	Production of printed Project information sheets and other outreach material	7,000			7,000			7,000	<i>MoESWMCC</i>
<b>Other Operating Cost s</b>	Production of printed Project information sheets and other outreach material			2,500	2,500			2,500	<i>MoESWMCC</i>
<b>Other Operating Cost s</b>	Production of printed Project information sheets and other outreach material					400		400	<i>MoESWMCC</i>
<b>Other Operating Cost s</b>	Financial audits as per UNDP and GEF req uirements						16,000	16,000	<i>MoESWMCC</i>
<b>Grand Total</b>		<b>910,000</b>	<b>134,600</b>	<b>80,000</b>	<b>1,124,600</b>	<b>40,400</b>	<b>104,850</b>	<b>1,269,850</b>	

**ANNEX F: (For NGI only) Termsheet**

Instructions. Please submit a finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

**ANNEX G: (For NGI only) Reflows**

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agency is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

**ANNEX H: (For NGI only) Agency Capacity to generate reflows**

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies' capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).