

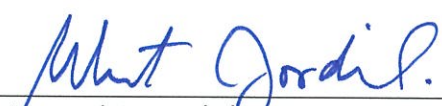

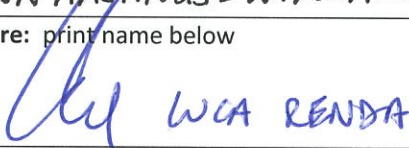


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United Nations Development Programme



Project title: Mainstreaming Low-emission Energy Technologies to build Guyana’s Green Economy		
Country: Guyana	Implementing Partner: Ministry of the Presidency, Office of Climate Change (OCC)	Management Arrangements: National Implementation Modality (NIM)
<p>UNDAF/Country Programme Outcome: <i>Priority Area 4 (A Sustainable and Resilient Caribbean - Policies and programmes for climate change adaptation, disaster risk reduction, and universal access to clean and sustainable energy in place); Indicators: (a) Percentage of new businesses in which RE services account for at least 50% of the energy mix (SDG 7.2.1 - RE share in the total final energy consumption); (b) Number of countries where sustainable, resilient and resource-efficient construction and retrofitting has been carried out in at least one Government building (SDG11.c.1 – Percentage of financial support that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings).</i></p>		
UNDP Strategic Plan Output: 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)		
UNDP Social and Environmental Screening Category: B (moderate)	UNDP Gender Marker: 2	
Atlas Project ID: 00110555	Atlas Output ID: 00109749	
UNDP-GEF PIMS ID number: 5831	GEF ID number: 9650	
Planned start date: 30 April 2019	Planned end date: 1 May 2023	
PAC meeting date: November 9, 2018		
<p>Brief project description: The Project aims to accelerate the uptake of renewable energy (RE) and energy efficiency (EE) technologies to reduce national dependency on imported fossil fuels and support Guyana on its path towards more decentralized, inclusive and resilient development. To this purpose, the Project will develop and operationalize one or more business models for RE generation. It will further strengthen delivery skills of public and private energy stakeholders, develop a portfolio of low-emission energy projects and secure investment for implementation of 4.4 MW RE/EE capacity. The electricity produced (7,000 MWh annually) will benefit approx. 10,000 individuals (m/f equally) and translates into fiscal budget savings of US\$ 850,000 annually. The GHG emission reductions over a 10-year period will be about 271,000 tCO₂e_q for direct and post-project investments combined.</p>		

FINANCING PLAN		
GEF Trust Fund <i>or</i> LDCF <i>or</i> SCCF		USD 1,750,172
UNDP TRAC resources		USD 0
Cash co-financing to be administered by UNDP		USD 0
(1) Total Budget administered by UNDP		USD 1,750,172
PARALLEL CO-FINANCING		
	UNDP	USD 345,430
	Government	USD 6,070,000
	<i>Private sector and loans</i>	<i>USD 0</i>
(2) Total co-financing		USD 6,424,430
(3) Grand-Total Project Financing (1)+(2)		USD 8,174,602
SIGNATURES		
Signature: print name below 	Agreed by Government	Date/Month/Year: 4/7/2019
Signature: print name below  DAWN HASTINGS - WILLIAMS	Agreed by Implementing Partner	Date/Month/Year:
Signature: print name below  WCA RENDA	Agreed by UNDP	Date/Month/Year:

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List of Acronyms and Abbreviations

AFHP	Amaila Falls Hydropower project
APR	Annual Progress Report
AWP	Annual Work Program
BOO(T)	Build-Own-Operate (and Transfer)
CAREC	CARILEC Renewable Energy Community
CARICOM	Caribbean Community and Common Market
CARILEC	Caribbean Electric Utility Services Corporation
CC(M)	Climate Change (Mitigation)
CDB	Caribbean Development Bank
CDM	Clean Development Mechanism
CDR	Combined Delivery Report
CIF	Cost, Insurance and Freight
CO	Country Office (UNDP)
CO _{2eq}	Carbon Dioxide Equivalents
CPAP	Country Program Action Plan
CROSQ	CARICOM Regional Organisation for Standards and Quality
CRSAP	Climate-Resilient Strategy and Action Plan
DBIS	Demerara Berbice Interconnected System
DG	Distributed Generation
DPC	Direct Project Costs
DPS	Direct Project Services
DREI	De-risking Renewable Energy Investments
DSA	Daily Service Allowance
EE	Energy Efficiency
EOP	End-of-Project
EPA	the Environmental Protection Agency
EPC	Engineering, Procurement and Commissioning
ERC	Evaluation Resource Centre
ESD	Energy for Sustainable Development
ESRA	Electricity Sector Reform Act
EU	European Union
FA	Financial Assistant
GAPE	Guyana Association of Professional Engineers
GBTI	Guyana Bank for Trade and Industry
GCCI	Georgetown Chamber of Commerce and Industry
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEA	Guyana Energy Agency
GEI	Government Electrical Inspectorate
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	German International Cooperation
GMSA	Guyana Manufacturing and Services Association
GNBS	Guyana National Bureau of Standards
GNI	Gross National Income

GOG	Government of Guyana
GPL	Guyana Power & Light Inc.
GRDB	Guyana Rice Development Board
GRIF	Guyana REDD+ Investment Fund
GSDS	Green State Development Strategy
GTI	Guyana Technological Institute
GUY = G\$	Guyanese Dollar
GWh	Gigawatt (GW)-hours (1 x 10 ⁶ kWh)
HECI	Hinterland Electrification Company Inc
HEP	Hinterland Electrification Project
HEU	Hinterland Electrification Unit (now: HECI)
HC	High-level Committee
HDI	Human Development Index
HFO	Heavy Fuel Oil
HPSV	High-Pressure Sodium Vapour
HQ	Headquarter (UNDP)
IDB	Inter-American Development Bank
LOA	Letter of Agreement
ICT	Information and Communication Technology
IEO	Independent Evaluation Office
INDC	Intended Nationally Determined Contributions
IP	Implementing Partner
IPP	independent power producer
IR	Inception Report
IW	Inception Workshop
JICA	Japan International Cooperation Agency
J-CCCP	Japan-Caribbean Climate Change Partnership
kV	kilovolt
kWh	kilowatt (kW)-hours
kWp	kilowatt-peak
LCDS	Low Carbon Development Strategy
LED	Light-Emitting Diode
LNG	Liquid Natural Gas
LOA	Letter of Agreement
LPAC	Local Project Appraisal Committee
MEPS	Minimum Energy Performance Standards
MF	Ministry of Finance
MoIPA	Ministry of Indigenous Peoples' Affairs
MOPI	Ministry of Public Infrastructure
MotP	Ministry of the Presidency
MRV	Measuring, Reporting and Verification
MTR	Mid-term Review
MW	Megawatt (1 x 10 ³ kW)
MWh	Megawatt (MW)-hours (1 x 10 ³ kWh)
MYWP	Multi-Year Work Plan
M&E	Monitoring and Evaluation
NAMA	Nationally Appropriate Mitigation Action
NAREI	National Agricultural Research and Extension Institute
NDC	Nationally Determined Contributions

NDS	National Development Strategy
NEC	National Electrical Code
NEP	National Energy Policy
NICFI	Norwegian International Climate and Forest Initiative
NICIL	National Industrial and Commercial Investments Ltd
NIM	National Implementation Modality
NPTA	National Procurement and Tender Administration
OCC	Office of Climate Change
OFP	Operational Focal Point
O&M	Operation & Maintenance
PA	Project Assistance
PAC	Project Appraisal Committee
PB	Project Board
PD	Project Director
PIF	Project Identification Form
PIMS	Project Information Management System
PIR	Project Implementation Review
PM	Project Manager
PMU	Project Management Unit
POPP	Programme and Operations Policies and Procedures
PPA	Power Purchase Agreement
PPG	Project Preparation Grant
PRODOC	Project Document
PSC	Project Steering Committee
PTA	Principal Technical Advisor
PUC	Public Utilities Commission
PUUP	Power Utility Upgrade Programme
PV	Photovoltaic
RE	Renewable Energy
RET	Renewable Energy Technology
REDD+	Reduce Emissions from Deforestation and forest Degradation
REEBC	Regional Energy Efficiency Building Code
REETA	Renewable Energy Efficiency Technical Assistance
RCU	Regional Coordinating Unit
RTA	Regional Technical Advisor
R3E	Renewable Energy and Energy Efficiency Project
SBAA	Standard Basic Assistance Agreement
SDG	Sustainable Development Goals
SEI	Skeldon Energy Inc
SESP	Social and Environmental Screening Procedure
SRF	Strategic Results Framework
SME	Small and Medium Enterprise
STAP	Scientific Technical Assistance Panel (GEF)
TA	Technical Advisor
TA	Technical Assistance (GEF)
TE	Terminal Evaluation (GEF)
TERI	The Energy and Resources Institute
TNA	Technology Needs Assessment
TOR	Terms of Reference

TRAC	Target for Resource Assignment from the Core
UAEP	Unserved Areas Electrification Programme
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention for Climate Change
USD = US\$	United States Dollar
V	volt
W	watt

List of Annexes

<i>Annex A</i>	<i>List of Documents</i>
<i>Annex B</i>	<i>GEF Tracking Tool at Baseline</i>
<i>Annex C</i>	<i>Identified Pilot Projects and Socio-economic and Environmental Benefits</i>
<i>Annex D</i>	<i>Terms of Reference</i>
<i>Annex E</i>	<i>UNDP Social and Environmental Screening Procure and Plans</i>
<i>Annex F</i>	<i>Stakeholder Engagement Plan</i>
<i>Annex G</i>	<i>Gender Analysis and Action Plan</i>
<i>Annex H</i>	<i>UNDP Risk Log</i>
<i>Annex I</i>	<i>Capacity Assessment and HACT Micro Assessment</i>
<i>Annex J</i>	<i>Cofinancing Letters</i>
<i>Annex K</i>	<i>Letter of Agreement Support Services</i>

II. DEVELOPMENT CHALLENGE

Introduction

1. The Co-operative Republic of Guyana is located in the northern mainland of South America. It is a member of the Caribbean Community and Common Market (CARICOM). With a Gross National Income (GNI) of US\$ 3,970 per capita, Guyana ranks 117th out of 187 countries on the UNDP Human Development index (HDI). At a total population of approx. 742,000 people (2015)¹, about 215,000 is concentrated in and around the capital, Georgetown. The remainder 527,000 people (about 71%) live in rural areas along the coast and in the inland (the "Hinterland").² Guyana's trade balance is systemically negative due to its dependence on imported fuel, manufactured products and machinery (- US\$ 77.3 mln in July 2016).³
2. Since the 1960s, Guyana has observed significant changes in its climate system with marked increases in temperatures, sea levels and the frequency and intensity of extreme rainfall events. Guyana is very vulnerable to climate change because of high levels of exposure and sensitivity to climate risks, combined with limited capacity to adapt. The primary exposure factor is the low-lying coastal plain along the Atlantic coast, which concentrates the majority of the population and economic activity, including agricultural production systems. Repeated floodings over the last decade and the droughts of 1997/8, 2009/10, and 2015, severely affected the country in terms of economic losses, degradation of natural resources, infrastructure, human livelihoods, and casualties.⁴
3. The Government of Guyana has taken action to build resilience and adapt to climate change, principally by improvements to the drainage and irrigation and sea defence systems. The country situation and national policies concerning vulnerability and adaption strategies are reflected in Guyana's Second National Communication (SNC) to the UNFCCC, the National Integrated Disaster Risk Management Plan, the National Adaptation Strategy to Address Climate Change in the Agricultural Sector, Guyana's Intended Nationally Determined Contributions to the UNFCCC (INDC, 2015), and the recent Climate Resilience Strategy and Action Plan (CRSAP, 2015).
4. Following the change in Government in May 2015, the Green Economy has been identified as Guyana's national development thrust. Although further articulation of this concept is still needed, it refers to a more decentralized development strategy built on economic diversification and social inclusion while preserving the country's natural resources. The Government of Guyana (GOG) presently lays out its vision for development over the next 15 years in its Green State Development Strategy Framework (GSDS) document⁵. The GSDS reflects the GOG's commitment to inclusive economic and social growth and aims to transform Guyana into a global model of sustainable development and environmental security. In order for this vision to become reality, Guyana will need to diversify its energy matrix by tapping into domestic, renewable energy sources and enforce the efficient and rational use of energy.

Energy policy

5. Guyana depends heavily on imported oil derivatives that fuel the electricity and transport sectors. A total of 5 million barrels of petroleum-based products were imported in 2015 representing about 13,703 barrels per day with a cost, insurance and freight (CIF) value of US\$355.2 million.⁶ This expenditure on oil reduces the

¹ Source: Guyana Bureau of Statistics, Statistical Bulletin, Annex 5 (<http://www.statisticsguyana.gov.gy/census.html>)

² Source IFAD: <http://www.ruralpovertyportal.org/country/home/tags/guyana>.

³ Source: <http://www.tradingeconomics.com/guyana/>.

⁴ In the period 2005-2015, floodings occurred yearly with the exception of 2007 and 2012. To illustrate the scale of economic losses: damage associated to the floodings in 2005 amounted to US\$ 465 million (60% of GDP).

⁵ Framework for Guyana Green State Development Strategy, prepared by the Ministry of the Presidency with technical and financial support of UNEP in close coordination with the UN Country Team, 28 March 2017.

⁶ GEA Annual report 2015.

financial resources available to invest in social development, environmental protection, adaptation to climate change and improving food security. An immediate objective of GSDS is to promote the use of domestic, renewable energy resources and decrease the annual financial burden to the fiscal budget.

6. Discovery in 2014 of oil and natural gas reserves off the coast of Guyana challenges brings opportunities for socio-economic growth based on crude oil and gas exports. While refined oil products will continue to be imported, a fuel switch from diesel and heavy fuel oil (HFO) to natural gas seems plausible for the electricity sector in the medium-term. This would bring along a significant reduction of sector GHG emissions due to the lower GHG intensity of natural gas compared to the baseline. The introduction of natural gas further implies that the NDC objective of 100% renewable energy use in the power sector in the next 15 years would be revised. Yet, on-grid and decentralized renewable energy technologies offer scale benefits in Guyana's small and sparse electricity systems, with natural gas-based thermal plants offering the required backup power in the DBIS.
7. The electricity sector is governed by the Electricity Sector Reform Act (ESRA, 1999) and successive amendments; ESRA details the processes for the setting of tariffs and extension of electricity to new customers. Relevant subsequent policy instruments include Chapter 39 of the National Development Strategy (NDS, 1996) – with subsequent modifications contained in Chapter 7 of the Revised NDS (2000); the Hinterland Electrification Strategy (2007); the Power Sector Policy and Investment Strategy (2010)⁷; and the Low Carbon Development Strategy (LCDS, 2010). The responsibility for the energy sector lies with the Ministry of Public Infrastructure (MOPI).
8. The draft National Energy Policy (NEP), completed in December 2016, updates the 1994 National Energy Policy of Guyana. The document addresses continuing concerns related to the dependence on imported fossil fuels, the need to address the efficiency and sustainability of energy supply and demand, and the need to address climate change issues. Further, the Green State Development Strategy (GSDS) Framework document places significant emphasis on ensuring the full delivery of a modernized energy sector, with an increased mix of clean and renewable resources. The Government is currently developing a long-term energy plan for the transition to increased use of renewables.
9. Sector institutions are the Guyana Energy Agency (GEA), founded in 1997, which has a broad mandate to recommend on energy policy development, to monitor the energy sector and to promote energy conservation and alternative sources of energy.⁸ Other agencies are the Environmental Protection Agency (EPA), the Government Electrical Inspectorate (GEI) and the Public Utilities Commission (PUC). While the Public Utilities Commission (PUC) has the mandate to provide oversight of GPL, they are not involved in setting the electricity tariffs.

Electricity sector

Guyana Power and Light (GPL)

10. Guyana Power and Light Inc. (GPL) is the national electricity company in Guyana. It is 100% owned by the GOG and is a monopolist for electricity transmission, distribution and commercialization in its franchise area, which encompasses – from West to East - the three coastal regions Essequibo, Demerara and Berbice. This area covers Guyana's capital Georgetown. GPL owns and operates two main grid systems: Essequibo Coast and the Demerara-Berbice Interconnected System (DBIS). GPL further owns and operates thermal power generators at six (6) locations with a total installed capacity of 174.39 MW (121.99MW, HFO; 22.4MW, LFO). GPL further operates isolated, diesel-based grid systems in the towns of Bartica and the islands Wakenaam and Leguan in the Essequibo River.⁹ Since electricity generation is not a monopoly, third-parties can feed electricity into the grid;
11. Much of the power plants in Guyana are over 22 years old and the total reliable generation capacity is significantly lower than peak demand, which may reach as high as 130 MW. The demand for electricity from

⁷ Klass, Verlyn (2010). Guyana Power Sector and Implementation Strategy. Georgetown: Government of Guyana.

⁸ Since 2004, it also acts as the licensor and supervisor of the fuel market and combats illegal imports and trading.

⁹ Source: <http://www.gplinc.net/>.

residential, commercial and industrial consumers continues to rise at a rate of 2.2-4.1% per annum. Annual expenditures on fuel imports are about US\$ 600 mln, of which 33% (US\$ 209 mln) is for electricity production by GPL. The share of fuel costs as part of GPL's operational costs amount to approx. US\$ 0.21 per kWh.¹⁰

12. In spite of the very high electricity tariffs (about US\$ 0.24-0.36 per kWh)¹¹, GPL operates with a large financial deficit that is yearly replenished by the Government. Due to inefficient power plants and high technical losses, energy production costs are well above the regional average. GPL's revenues are further affected by large commercial losses. The service level is not up to standard and power outages are frequent¹², creating unwillingness to pay among captive consumers. Meanwhile, wealthy clients and businesses tend to install generators for self-supply (estimated 70 MW) to cut electricity costs. GPL's licence¹³ sets operating standards and performance standards for the public electricity service but adequate financial, technical and managerial conditions are not in place to attain a satisfactory degree of compliance.
13. Studies financed by the Inter-American Development Bank (IDB) and the GOG, have analysed GPL's ability to manage its business and operations and revealed the need to undertake specific actions in the following areas: (i) system planning; (ii) project management; (iii) loss reduction; (iv) network design; (v) quality of service; (vi) expansion of the network to unserved areas; (vii) sustainable electrification of the Hinterland; and (viii) the design, implementation and operation of on-grid and off-grid RETs, among others. IDB support includes technical assistance and soft investment loans, mainly focused on improving the distribution network.¹⁴ In September 2016, the Cabinet approved a contract for implementation of a management strengthening programme for GPL funded under the EU/IDB Power Utility Upgrade Programme (PUUP).¹⁵
14. To improve the integrity of the electricity distribution grid and prevent malfunctioning and hazards, technical standards were set in January 2016 as part of the Electricity Sector Regulations. An important part of these regulations is the National Electrical Code (NEC, 2014). The NEC establishes the standards for the safe installation of electrical wiring and equipment. These standards will help to ensure that electrical products and services meet minimum requirements for safety and quality. Personnel involved in electrical installation work must now ensure familiarity with the NEC and be licensed by the Government Electrical Inspectorate (GEI). In 2017, GPL issued interim arrangements for grid-connected distributed energy generators (for 220V and 13.8kV network).¹⁶ The maximum generator size (PV) is bound by a customer's own energy demand and limited to 100 kWp.¹⁷
15. Conceived as a major breakthrough for upgrading Guyana's electricity system, the 165-MW Amaila Falls Hydropower project (AFHP) has been on the national agenda for years. A special purpose company was set up as a public/private partnership BOOT project supported by IDB. The Norwegian International Climate and Forest Initiative (NICFI) in 2014 deposited USD 80 million in the Inter-American Development Bank (IDB) earmarked for Guyana's equity share in this company. However, political controversies made the private partner withdraw from the AFHP in 2013. Moreover, some technical issues were not developed to fully maturity, while the incorporation of the transmission infrastructure into the AFHP would lead to a sub-optimal financial solution for the GOG, adding to the financial risk profile of the Project.

¹⁰ Source: GEA Strategic Plan 2014-2018, p17-18.

¹¹ Electricity tariffs vary per customer category. There is a residential "lifeline" tariff (A) of G\$48.4 for electricity consumption up to 75 kWh per month and G\$53.7 above this level. The highest commercial tariff (GB) is G\$72.8 per kWh. Exchange rate: USD/GUY = 201 (February 2018). Additional charges apply for contracted capacity.

¹² It has been estimated that Guyana experiences an average of 31 power outage days per year.

¹³ Amendment to the "Licence to Supply Electricity for Public Purposes" granted to Guyana Power & Light Inc, issued effective October 4, 2010 by Prime Minister.

¹⁴ Source: GEF CEO Endorsement Request project "Sustainable Energy Program for Guyana" (IDB GY-G1004, GEF ID 4520).

¹⁵ Source: <http://gina.gov.gy/1-6b-consultancy-contract-approved-towards-strengthening-gpl-management/>

¹⁶ Interim Arrangements for Grid Tied Distributed Energy Resources – Technical Requirements for Grid-Tied DERs, GPL Projects Division, June 29, 2017.

¹⁷ See: GPL website, <http://gplinc.net/renewable-energy>.

16. The Project was put on the backburner by the current Government that took office in 2015 and which tends to favour smaller, decentralized RE systems instead.¹⁸ The AFHP case demonstrates: (i) the need for strengthening the governance of the national power sector; (ii) GPL's inability to enter into a BOOT agreement without additional financial guarantees; and (iii) the need for public sector investment in Guyana's transmission infrastructure to accommodate independent power producers in the medium- and long-term.

Hinterland electrification

17. Electrification of the interior of the country (the "Hinterlands") is pursued by the Hinterland Electrification Company Inc (HECI), which has evolved from the Hinterland Electrification Unit (HEU) created under the GOG/IDB Unserved Areas Electrification Programme (UAEP). The main objectives of the UAEP (2004-2010) were (i) to expand coastal electricity grids to unserved areas within a feasible distance from the grids, and (ii) to examine ways in which Hinterland areas could be provided with electricity in the most cost effective and sustainable manner. Following its closure, the HEU was maintained to provide technical and other support to the Hinterland projects implemented under the UAEP and develop and implement new projects based on GOG's development plan for the Hinterland. In January 2015, the HEU was incorporated with the name Hinterland Electrification Company Inc.) as a subsidiary of National Industrial and Commercial Investments Ltd. (NICIL) for holding of all satellite electricity companies owned by NICIL.¹⁹ Functionally, HECI belongs to the Ministry of Public Infrastructure (MOPI).
18. The satellite electricity companies are the following: (1) Linden Electricity Company Inc. (LECI); (2) Kwakwani Utilities Inc. (KUI); (3) Lethem Power Company Inc. (LMPC); (4) Port Kaituma Power & Light Inc. (PKPL); (5) Mahdia Power & Light Inc. (MPL); and (6) Matthew's Ridge Power & Light Inc. (MRPL). The HECI's mission is to maintain the steady extension and upgrade of electricity supply systems across the Hinterland, progressively improving operations and merging isolated services as appropriate.²⁰
19. While Guyana's overall electrification rate is estimated at 82% (2015), people in remote, sparsely populated areas often have no access to modern electricity services. A detailed assessment of energy needs in the Hinterlands was conducted for the Government in 2012 with financial support from UNDP.²¹ To improve service, the GOG launched several initiatives, most of which promote the use of photovoltaic installations supplied by small-scale private companies. The UAEP and HEP installed 11,000 65-Watt PV solar home systems from 2011 to 2014. As of January 2015, 200 communities had benefited from the work by the HEP (now HECI).²² Community-level PV systems are installed, for example under the GOG/IDB GEF project "Sustainable Energy Program for Guyana". A 400-kW PV system with battery storage is currently under construction in Maburama (940 inhabitants, Region 1) to complement the existent diesel power plant.²³
20. However, a technical and socio-economic evaluation of the HEP carried out in 2010²⁴ revealed a number of sustainability issues that had to be addressed, including: (i) technology (improper system installation, inadequate system design and choice of components); (ii) training (lack of local skills to perform adequate

¹⁸ Source: Review of the Amaila Falls Hydro Power Project in Guyana, Norconsult, 2016.

¹⁹ NICIL was incorporated as a Private Limited Company in July 1990 and is 100 percent owned by the Government of Guyana. Its objective was to have a unified and systematic management of Government's shareholdings. NICIL acts as the holding company for Government owned interests, property management which includes the acquisition, disposal or rental of Government owned properties; for monitoring of GOG equity in other companies, and as the agent for GOG entities in the disposal of properties and management of companies. NICIL has a board of directors that consists of the Minister of Finance, the Head of the Presidential Secretariat, the CEO of Go-Invest, an opposition representative and the Executive Director of NICIL. Source: <https://finance.gov.gy/national-industrial-and-commercial-investments-limited-nicil/>

²⁰ Source: <http://www.electricity.gov.gy/index.php/about-us>.

²¹ Energy Access at Community Level for MDG Achievement in Hinterland Areas - Final Report, by A. Karner et. al., ConPlusUltra GmbH, St. Poelten, Austria, for the Government of Guyana and UNDP, December 2012.

²² <http://global-climatescope.org/en/country/guyana/#/enabling-framework>

²³ Source: <https://www.meeco.net/blog/remote-community-in-guyana-to-be-powered-by-solar-energy/>

²⁴ "Evaluation of Solar Electricity Demonstration Projects implemented in Four Hinterland Villages", final report, Dr. Mark Bynoe, October 4, 2010.

maintenance; technicians migrating out of the villages); (iii) organisation (weak record keeping, lack of clarity of roles and mandates between villages councils and HECl; and (iv) weak business models including a lack of funds for maintenance tasks). The continuation of the HECl has likely contributed to mitigate some of these issues; notwithstanding, factual information on the operational status of installed PV systems is absent or not available; in general, monitoring of the interventions has not received due attention over time. In its 2015 Annual Report, GEA highlights its effort to track PV installations across Guyana, documented at 1.164 MW. Depending on available resources, GEA engineers also paid visits to some community services (education, health) to ensure system operations and take corrective action in needed.²⁵

Renewable energy and energy efficiency (RE/EE)

21. Guyana has significant potential for renewable energy (RE) sources including solar PV, thermal solar, small and large-scale hydropower, biomass and wind energy. Roof-top PV systems on commercial buildings and (agro-) industrial establishments amount to at least 30 MW. A supply chain is in place to design and implement these systems, which are typically pursued to reduce the volume of electricity contracted from GPL. In May 2016, the GOG announced a programme for implementing PV systems in public buildings, resulting in 178.5 kWp capacity being installed during 2017 with oversight from GEA. A contract for another 57 buildings has been awarded and is currently being implemented (740 kWp); additional 18 buildings (382 kWp) will be targeted based on energy savings contracting.²⁶ Envisagedly, the majority of these systems will be grid-connected.
22. In 2017, GPL issued a call for Expressions of Interest for the interconnection of privately owned and operated, grid-tied PV systems ("solar farms") to supply power to the DBIS system. Small, grid-tied solar-PV systems are embedded in the diesel grids in Mahdia and Port Kaituma for a total 10 kWp. Bagasse from the public sugar cane company GuySuCo is used by Skeldon Energy Inc (SEI) to operate a 30-MW cogeneration (plus 10 MW diesel) plant supplying the DBIS grid. A 400-kW rice husk gasifier was installed in 2015 by Ramlakhan & Sons Rice Mill in Region 4 with technical and financial support from TERI, India.²⁷
23. Small hydropower plants have been in operation at several mining and processing sites in the inland, including the Kato and Tumatumari projects (Region 8). Feasibility studies and technical studies were carried out for the Kato hydro power plant (330 kW) on Chiung river, funded by UNDP.²⁸ GEA counts with a team to support micro-hydropower development in Guyana. The GEA 2015 Annual Report mentions the 20-kW Hosororo plant for turmeric production linked to the National Agricultural Research and Extension Institute (NAREI), and a primary school (Region 1). Another project (100-kW) is the Kumu Falls project (Region 9). GEA has an overview of 67 potential hydropower plants for download on its website. Private project developers seek opportunities to rehabilitate abandoned hydro plants to serve isolated villages, possibly combined with an industrial end-use; these projects advance very slowly however.²⁹ Rehabilitation of the Kato project is targeted by the GEF-5 sponsored GOG/IDB project.³⁰
24. GEA is involved in a wind measurement programme in Guyana. In collaboration with the GOG/IDB "Sustainable Energy for Guyana Program" which funded measurement equipment, GEA assisted HECl to select fifteen potential wind sites along Guyana's coast. During 2015, wind data were collected at four sites (Port Mourant, Kumu, Mahdia, and Georgetown). In 2008/9 wind measurements performed in Orealla, Jawalla, Campbellton and Yupukari in the in the Hinterlands. The data were analysed by the Department of Electrical Engineering of the University of Guyana which concluded that wind speeds were too low for commercial wind

²⁵ GEA Annual Report, section 1.6.1-3.

²⁶ Source: Guyana website. http://www.gea.gov.gy/index.php?option=com_content&view=article&id=69:guyana-advances-with-solar-pv-installations&catid=8:press-releases&Itemid=111

²⁷ GEA Annual Report, section 1.9.3-4.

²⁸ "Hydropower feasibility study on the Chiung river near Kato (Potaro-Siparuni Region, Guyana)", by Ingeniería, Estudios y Proyectos NIP S.A., Madrid (Spain), for the GOG and UNDP-Caricom, under UAEP Contract N°. OPM-S-01-2009 (December 2009).

²⁹ Such as the Tumatumari hydropower project (2.0 MW).

³⁰ GEF project "Sustainable Energy Program for Guyana", IDB GY-1004, GEF ID 4520, with a GEF grant of US\$ 5.000,000.

projects in the area. A study funded by the Dutch Government (2002/3) explored the feasibility of a 10-MW wind farm near Hope Beach and found good wind conditions (6.5-8.5 m/s), but the project did not materialize as no agreement could be made with GPL about the feed-in tariff. As of 2018, the Hope Wind farm project is being pursued by Guyanese businessmen, aiming at a feed-in tariff of US\$ 0.18 per kWh.³¹ The negotiations remain slow due to the absence of a clear regulatory and price framework for independent Power Producers (IPPs).

25. GEA's core functions include the dissemination of information related to energy management and energy conservation, and the development and utilization of alternative sources of energy.³² The activities of GEA are financed from Government subventions and from revenue generation. GEA was awarded a contract under the GOG's EE programme 2017 to implement over 10,000 LED light fixtures in 46 government buildings, as well as 100 induction lights to replace obsolete HPSV street lights. GEA further completed energy consumption assessments of 70 buildings from 2012-2015 along with the change-out of inefficient lighting at 28 public buildings. In 2015, GEA conducted 8 workshops and seminars on energy awareness and gave presentations on energy-related issues at 43 schools in 7 Regions. Introductory manuals on energy conservation, EE measures in buildings and houses, and some RE and EE technologies are available at GEA's website.
26. Through the Guyana National Bureau of Standards (GNBS), Guyana is member of the CARICOM Regional Organisation for Standards and Quality (CROSQ), which currently implements the Regional Energy Efficiency Building Code (REEBC) Project³³ and the Renewable Energy and Energy Efficiency (R3E) Project (funded by GIZ and the German National Metrology Institute, respectively). The R3E Project has issued draft minimum energy performance standards (MEPS) for Energy Efficiency Buildings in the REEBC Project which were under review by the member states in November 2017. In 2018, the R3E project will proceed to develop model legislation and declare regional standards for lighting, air conditioners and refrigerators and start an energy labelling pilot.³⁴

Barrier analysis

27. The development of Guyana's energy sector however is hampered by a series of barriers, impeding its capacity to meet national priorities and targets for incorporating RE and EE. These barriers include: (a) policy: weak institutional framework characterised by legal and regulatory voids for RE-based electricity generators; (b) technology: weak in-country knowledge base for design, implementation and O&M of RE technologies (with the exception of solar PV); (c) delivery models: poorly articulated value chains for delivery of RE/EE technologies by public and private actors; (d) finance: constraints to leverage public and private investment capital; and (e) information: scarce, scattered or in-existent data for project identification and design.
28. This situation is exacerbated by systemic barriers and root causes including the overall small market size; a small population with emigration of qualified people; and frequent occurrence of natural disaster, causing setbacks in the development process. Historically, little importance has been given to monitoring and evaluation of interventions (projects), which is an impediment for verifying the performance of installed energy technologies and to assess economic, social and environmental impacts. Moreover, information and statistical data are often incomplete, outdated, or based on unclear methodologies. Technical, managerial and institutional capacities definitely need to be improved.
29. For a detailed analysis of the indicated barriers, reference is made to the GEF CEO Endorsement Request document of the Project.

³¹ <https://www.kaieteurnewsonline.com/2018/01/12/hope-beach-wind-farm-projectpatterson-land-was-leased-for-50-years-by-jagdeo-govt/>

³² GEA Annual Report, p.62.

³³ In partnerships with the GIZ REETA programme Renewable Energy Efficiency Technical Assistance (REETA).

³⁴ Source: <https://www.crosq.org/index.php/media-and-resources/item/115-crosq-talking-energy>

Development problem

30. The development problem addressed by the Project is formulated as follows: *“Barriers in Guyana’s energy sector affect the delivery of adequate, low-emission energy systems required for building a Green State following a climate-resilient development path”.*

III. STRATEGY

Development objective

31. The objective of the Project has been formulated as follows: *“To promote low-emission energy technologies across prioritized sectors, thereby increasing competitiveness and climate-resilience of the national economy.”*

Approach and theory of change

32. The approach of the Project is to operationalize a number of high-impact business cases for RE/EE technologies in Guyana by enhancing and streamlining of regulation and procedures. These business cases include: (1) interconnection of small- and medium-size RE generators to the GPL grid under a Power Purchase Agreement (PPA)³⁵; (2) small RE-generators connected to the GPL distribution grid (Distributed Generation); (3) the use of RE generators to complement or replace existent diesel in local grid systems operated by GPL, HECL and its satellite utilities. These business cases are critical for Guyana to transform its power sector and take benefit from domestic, renewable energy resources as foreseen under the country’s Green State Development Strategy.
33. Rather than pursuing a full-fledged barrier removal strategy, the Project will follow a more hands-on approach by tackling the legal, technical, managerial and knowledge aspects of the business cases one-by-one. This involves close interaction with the direct stakeholders (GPL and HECL), which will be organized by setting up specific working groups. Work under the Project will be aimed at upgrading and complementing existing regulation, thereby taking benefit from best practices from other countries. Sector associations and project developers will be actively engaged with a view on integrating the RE/EE value chain and ensuring acceptable and profitable solutions for all parties.
34. The Project departs from the existing situation that ad-hoc contracts for third-party power generation (IPP/DG) exist in Guyana. The Project aims to harmonize interconnection requirements and dispatch rules, create model contracts and introduce a transparent pricing methodology. Particular attention will be given to the scalability of developed methodologies, regulation and model contracts, given the variety of project contexts in Guyana.³⁶ This regulatory “upgrade” will increase transparency for third parties and reduce transactions costs. The approach followed draws upon UNDP’s De-risking Renewable Energy Investments (DREI) framework which systematically identifies the barriers and associated risks that hold back investment in renewable energy generation. Ultimately, transparency and de-risking will not only attract (private) investment capital, but also foster competition between RE project developers resulting in better price bids for the energy off-taker (which is GPL by default).
35. The proposed approach is justified by the small size of Guyana’s power sector; there is still scope to move forward through a system of contractual arrangements. Moreover, the current policy and institutional framework is not sufficiently crystallized for embarking on a comprehensive reform, which is anyhow unlikely to take place during the Project’s lifetime. Notwithstanding, political consent for increased private investment in electricity generation, and for the adoption of improved (and financially more sustainable) management models, is a key condition for Project success. To this purpose, Project component 2 will foster a high-level dialogue on power sector strategy with the aim to ensure political buy-in throughout the Project’s lifetime.

³⁵ Typically grid-connected solar, wind and biomass projects with an electricity generating capacity in the range 1-10 MW.

³⁶ Upscaling to for example, mini-hydro projects (15-50 MW) interconnected to the DBIS system downscaling to 20-500 kW range (solar PV, pico-hydro, gasifiers etc.) for local grids.

Moreover, with presidential elections scheduled for 2020, the Project can act as an agent to provide continuity to the national energy agenda.

36. The Project will demonstrate some business models by absorbing project development costs and by co-investment in RE installations. Project component 3 will demonstrate the technical and financial feasibility of (selected) technologies after de-risking and attract investor's attention on IPP opportunities. Funding of RE systems for local grids and community services takes particular relevance in Guyana, in support of national social, economic and environmental development objectives and are in alignment with the UN SDGs. Given the scarcity of funding capital in Guyana and the high social impact, grant support for selected community services is justified.
37. Transversal aspects include monitoring of results and strengthening of capacities along the value chain. Training of energy professionals will be built on baseline activities and focused on setting quality standards for installation engineers. In the public sector, capacity building will be embedded in a process to improve coordination and articulation between sector entities with the specific goal of mainstreaming of RE/EE technologies into public procurement ("green procurement"). In this context, the Project aims to capitalize on baseline work on EE minimum performance standards (MEPS) carried out in regional (CARICOM) context.
38. It is noted that the Project will pay more attention to utility-scale renewable energy plants than anticipated at PIF stage. By consequence, the development problem is essentially addressed from the energy sector perspective. Originally, a more holistic approach was envisaged built upon the draft Climate-Resilient Strategy and Action Plan (CRSAP), which was focused on energy end-uses in four prioritized sectors. This change in perspective is made because: (i) the CRSAP has not been approved by the GOG as a formal policy document; (ii) instead, the Green State Development Strategy is pursued; (iii) large commercial energy users and agro-industries are increasingly aware of the opportunities of RE generation for self-supply and sales of surplus power; and (iv) national utility GPL has demonstrated interest in promoting the Independent Power Production modality. As a result, the Project will be implemented in partnership with the key energy sector entities GPL, HECL and GEA.

Geographical scope and project types

39. The Demerara-Berbice Interconnected System operated by GPL serves the plains along the Atlantic coast and stretches from Region 1 (NW) to Region 10 (E). The capital, Georgetown is in Region 4. The HECL satellite electricity companies are found in: Linden (Region 7); Kwakwani, Port Kaituma, and Matthew's Ridge (Region 1); Lethem (Region 8); and Mahdia (Region 9). The second-largest town is New Amsterdam, east of Georgetown at the coast (Region 6). GPL is responsible for electricity supply in Bartica (Region 7). The Project will be focused on the DBIS grid and selected towns, likely New Amsterdam, Bartica, and Mabaruma (Region 1). As such, the Project will primarily work in the Regions 1-5, 7, and 10.

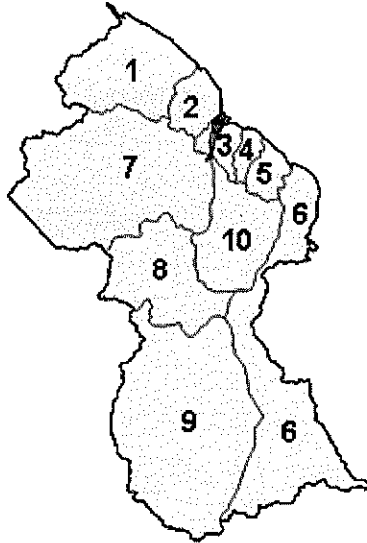


Figure 1 Map of administrative regions of the Co-operative Republic of Guyana. Georgetown is in Region 4.

40. Based on an analysis of the potential for low-emission energy technologies in Guyana, four project categories have been defined as shown in the following table. For each one, the field of application and relevant technologies are presented, as well as the mechanism for project development and delivery and the investment model.

IDENTIFIED PROJECT CATEGORIES AND ASSOCIATED DELIVERY AND INVESTMENT MECHANISMS							
Project Category and Type		Application	Key Partner	Technology	Investment model	Delivery mechanism	
1.	RE generation	DBIS grid	GPL	solar farms (PV)	Public or third-party (PPA) investment	Public or private RE project development	
				co-generation (agro-industries)	Third-party investment (PPA); joint venture	Industrial process implementation	
2.	on-grid	local (hybrid) grids	GPL HECI and satellites	large PV self-suppliers (rooftop)	Private investment (DG, net billing)	Private business development	
				solar farms (PV); micro-hydro; battery storage; grid optimization and control	Public investment; third parties (DG)	Public RE project development	
3.	EE and energy management	Public buildings	GPL GEA	large PV self-suppliers (e.g. telecom services)	Third-party investment (PPA); joint venture	Private business development	
				Public spaces	Energy conservation and management (ISO 50001); EE appliances; SWH and rooftop PV	Public investment; accrued energy savings	Public energy management programme; Integrated Services-model
				Public utility services	EE water pumps	Public investment	Public EE project development
4.	RE generation and EE appliances	Education buildings	HECI GEA External partnerships	Rooftop PV; battery storage; EE appliances and lighting	Public investment	Public services expansion programme	
		Health buildings			Public investment	Public services expansion programme	
		Government buildings and services			Public investment	Public services expansion programme	
	off-grid	Food processing and small workshops		Solar PV; battery storage; EE appliances and lighting	Micro-credits and grants	Small business development programme	

IV. RESULTS AND PARTNERSHIPS

Project components

41. The Project “Mainstreaming Low-emission Energy Technologies to Build Guyana's Green Economy (PIMS 5831)” will pursue its objective through the following components, which are described in detail in the next sections:
 1. Sustainable business and financing models for low-carbon energy technologies;
 2. Policy framework and institutional capacities;
 3. Deployment of low-emission energy technologies; and
 4. Monitoring and Evaluation.
42. The envisaged Project outcomes and outputs are described in the following paragraphs. Reference is made to the Table for the definition of project categories.

Component 1. Sustainable business and financing models for low-carbon energy technologies.

Outcome 1.1. The feasibility of low-carbon energy investments has been enhanced through innovative business and financing models reducing project risks (GEF US\$ 465,000; co-finance US\$ 360,000).

43. This project component pursues the design of innovative business and financing models for RE-based electricity generators interconnected to the main grid (DBIS) and small regional grids in Guyana, as well as strengthening of technical capacities and project development skills among public and private stakeholders. The proposed activities fit into UNDP’s De-risking of Renewable Energy Investments (DREI) methodology³⁷. Adequate interconnection capacity (involving transmission grid and substations) and effective governance processes are key for triggering investment in electricity generation. This output will follow a hands-on approach by providing expertise to project developers, GPL and the Government to enable RE projects.
44. A practical approach is pursued, aimed at reducing the technical and legal barriers for third-party generators to operate under the IPP modality supplying energy to GPL (the off-taker by default). Specific gaps include procurement and contracting models, grid code and dispatch rules and lack of a reference price for power generation; these will be addressed (outputs 1.1.1 and 1.1.2). Policy risks extend to financial back-up for GPL, the lack of a strategy and road map to advance towards a low-emission, efficient power sector. As an overarching governance barrier, it is acknowledged that procedures for engagement between GPL and project developed would need to be transparent and formalized, and as expedite as possible.
45. Supportive activities extend to training and certification of technicians and the compilation and systematization of relevant RE and EE business cases for a range of energy end-users in Guyana, including public and commercial buildings, small manufacturing companies, agro-industries, and the residential sector. To this purpose, the Project will seek alliances with national institutions including the University of Guyana and the Guyana Technical Institute (GTI) and engage with regional programmes. As such, output 1.1.3 aims to strengthen the value chain for the delivery of low-emission energy technologies.
46. The design and operation of small grids in Guyana has been based on diesel generation, which is costly and financially not sustainable due to prohibitive transport costs. By consequence, quality of the service is poor and at best, intermittent. The Project will provide technical assistance for the optimized design of hybrid grid systems, taking benefit from business models for IPP or DG developed for the main grid. Tools and methodologies for technical and economic evaluation of local grid scenarios, will be introduced and explained (output 1.1.4).
47. Work under this component will draw upon experiences with existing business cases, including the Amaila Falls hydropower project (165 MW), the Skeldon Energy Inc. cogeneration plant (publicly owned), small private co-generation plants (such as Ramlakhan Rice Mills, 400 kW), the current initiative by GPL for

³⁷ For more information, please refer to: http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/derisking-renewable-energy-investment.html.

interconnecting solar PV under a PPA (3 MW), wind farm development plans at Hope Beach (26 MW), and the Kato micro-hydro project (300 kW) targeted by the IDB/GEF Guyana Sustainable Energy Program, implemented by HECI.

48. In the End-of-Project situation (EOP), the following results are expected: (i) fully developed procurement and contractual arrangements enabling third-party generators to connect and sell electric energy to GPL (under PPA, DG and net metering/billing scheme); (ii) governance model and contractual arrangements in place enabling small-scale renewable energy generators to supply energy to regional grids; (iii) RE/EE information clearinghouse or repository established and operational; and (iv) a certification scheme for RE/EE installation personnel operational and sustained.

Output 1.1.1. Identification and detailing of innovative business and financing modalities for low-carbon energy investments in prioritized sectors (GEF US\$ 225,000; co-finance US\$ 200,000).

49. This output encompasses the identification and development of innovative business and financing schemes for low-emission energy investments in Guyana, with a focus on distributed electricity generators interconnected to the main grid (the DBIS). Business modalities include Independent Power Production (IPPs) enabling third-parties (non-GPL) to connect and sell electricity to the grid under a Power Purchase Agreement (PPA). Other modalities are partnerships between GPL and third parties, and net metering/billing – the latter typically for commercial businesses, small manufacturing companies and residential end-users served by the distribution grid. Generators up to 5 MW can connect to the distribution grid (Distributed Generation), while larger capacities interconnect to the transmission grid under a PPA.
50. Technical de-risking activities encompass: (i) review of transmission grid capacity to accept renewable energy-based IPPs; (ii) review of distribution grid capacity in prioritized areas to accept renewable energy-based DGs; (iii) systematization of existing business models to draw lessons and enhance ownership and management models, operation & maintenance issues, and cost recovery. The activities will address the situation in both the main grid (DBIS) and regional grids. Key project partners will be GPL, HECI and GEA. The analysis will depart from GPL's Development and Expansion Plan.³⁸
51. Financial de-risking will include the following: (iv) review of current gaps for IPP/PPA contracting with GPL and development of proposals to close such gaps; (v) identification of financial guarantee mechanisms to enable GPL to enter into PPA with third parties; (vi) formalization of grid code allowing for the interconnection of RE generators to the transmission and distribution grid; (vii) definition of an (initial) reference price model to start PPA/DG negotiations; and (viii) technical assistance for operationalisation of net metering/billing scheme.
52. GEF resources will be used for: (i) hiring of Technical Advisor for detailing of Terms of Reference and review of requested services; (ii) contracting of one or more specialized firms to deliver technical and legal studies, analysis and proposals; and (iii) travel budget for project visits and negotiations.

Output 1.1.2. Delivery of manuals and model contracts for the application of innovative business and financing modalities in public and private sectors (GEF US\$ 30,000; co-finance US\$ 30,000).

53. This output encompasses the preparation of guidelines and manuals for structuring and detailing of electricity generation projects under PPA contracts and other arrangements. Model contracts will be prepared for typical business cases to remove (perceived) legal risks and for reducing project development throughput times (thereby reducing capital costs). Downscaled contracts will be developed for Distributed Generation and for regional grids. As such, the scope of the products delivered will be the project categories 1 (RE generation interconnected to the DBIS grid) and 2 (hybrid grids). Identified stakeholders include NPTA, MF, GPL, GEA, and HECI.
54. It is expected that the manuals and model contracts will serve as an asset for GPL and third parties during the final stages of a project development process, and will be used to guide the preparation of tender processes for power generation by GPL and/or the Government. It is envisioned to utilise these products for the

³⁸ GPL Development and Expansion Programme 2016-2020, April 2016. Available at: <http://www.gplinc.net/sites/default/files/Uploaded%20Files/D%26E%20Programme%20%202016%20-2020.pdf>

implementation of the pilot investments (see Outcome 3.1). Based on the experiences gathered, the manuals and model contracts will be updated and improved.

55. GEF funding for this output will cover the costs of: (i) one or more national experts for drafting manuals and guidelines; (ii) one legal expert in public procurement and electricity market regulation for drafting PPA and DG model contract; and (iii) costs of printing and publication of manuals, guidelines, concepts for sharing and consultation.

Output 1.1.3. Strengthening of technical and commercial skills of the electric utility, contractors, and suppliers of RE/EE systems (GEF US\$ 120,000; co-finance US\$ 50,000).

56. This project output aims to reduce the technical risks of RE and EE projects in Guyana by addressing the information and delivery skills barriers. As part of the information barrier, the absence of an information clearinghouse (or repository) for the energy market has been observed, which is an impediment for diffusion of knowledge and promotion of standardized methodologies. One line of action is the adaptation and publication of relevant RE/EE business cases for Guyana, such as retrofitting of buildings, the use of RE and EE equipment in public and commercial buildings, the implementation of energy management (ISO 50001) systems, and the application of RE/EE systems by agro-industries and small manufacturing companies.
57. This activity will draw upon research and best practices developed in other countries including CARICOM countries, Mexico, Brazil, UK, USA and Canada. The use of RETs for agro-industries can draw on the experiences gained under as host of GEF CCM projects in the region. A better understanding of project characteristics and technical and financial key data will assist energy consumers and project developers to assess project risks in an early stage resulting in a higher success rate through technically and financially more robust projects. While the Project itself, or GEA, may act as an interim repository, recommendations for its long-term institutionalization will be put forward as input for the high-level dialogue.
58. It is further observed that the delivery capacity of the public sector entities (GPL, HECI, and GEA) is insufficient to meet demand from society; moreover, their mandate is limited. While human and financial resources are already scarce, there are very significant inefficiencies impeding the entities to work together and proceed efficiently. Political support is required for a reflection on the current modus operandi, which is a subject for analysis in the High-level Committee (Outcome 2.1). A business organisation expert will be hired to perform a gap analysis and provide recommendations for improvement. The Project will engage with MOPI to critically review the project development cycle and establish effective teams that are accountable for an assigned project portfolio. This exercise should improve the exchange of information between sector agencies, promote standardization of work methodologies and increase ownership.
59. Another aspect of delivery skills are technical capacities and certification of installation personnel in the private and public sector. Qualified personnel is an asset for EPC contractors and subcontractors to reduce (perceived) technical risks during the construction phase of a project. As such, it adds value and enhances the profile of a company. The GIZ REETA project has established partnerships with the University of Guyana and the Guyana Technical Institute for technical training. Another relevant actor is the Guyana Association of Professional Engineers (GAPE), which pursues a register of Chartered Engineers in Guyana. The Project will seek alliances with these stakeholders for embedding this activity into an appropriate host entity.
60. GEF funding will be used for: (i) specialized services to collate case studies and best practices for RE/EE, adapted to the Guyanese context; (ii) specialized consultancy in the field of business organization; (iii) training and certification of RE/EE professionals; and (iv) travel budget for participants in training events.

Output 1.1.4. Development of a sustainable business model for integration of low-emission energy technologies into regional grids (GEF US\$ 90,000; co-finance US\$ 80,000).

61. This output will provide technical assistance for the design and optimization of the isolated grids (category 2 projects) as operated in Guyana by GPL (Bartica, Wakenaam, Leguan) and HECI (Linden, Kwakwani, Lethem, Port Kaituma, Mahdia and Matthew's Ridge). Another area is Mabaruma (Region 1) where existent diesel currently complemented by 400-kWp solar and battery storage, and micro-hydropower development (Hosororo, 25 kW). A specific case is further the Kato 300-kW hydro project targeted by the IDB GEF project with HECI.

62. Most of these grids have grown organically promoted by the local Council or taking benefit from surplus power from the mining industry (as in Linden). The grids have poor characteristics leading to high technical losses and limited opportunities for the integration of RE-generators (to form hybrid, low-emission grids). Technical support is provided by HECL, which is also responsible for the diesel supplies.
63. The governance structure of these grids is weak. Tariff structures vary from place to place and generating costs are not fully recovered (diesel supplies are subsidized). In practice, villagers tend to suspend payments over time since diesel supplies are intermittent, compromising the quality of the electricity service, thereby creating a vicious circle.
64. This output will introduce methodologies for evaluation and technical optimization of hybrid grids with a view on technically sustainable, low-emission and least-cost electricity supply. It will further develop a governance and ownership model as a platform for enabling the insertion of small (RE) generators. The financial parameters for the context of Guyana will be determined, and production cost will be assessed for the various scenarios developed. The results will be presented to the key stakeholders and selected town councils. This activity will draw upon – and feed into – work done under output 2.1.1 related to governance and ownership issues in the power sector.
65. GEF funding for this activity will consist of: (i) hiring of Project Technical Advisor for drafting of TOR and supervision of requested services; (ii) contracting of one or more specialized firms to collect baseline information and design the requested models for hybrid grids under relevant scenarios; (iii) travel budget for visits to project sites.

Component 2. Policy framework and institutional capacities.

Outcome 2.1. Policy instruments and institutional capacities for implementing low-carbon energy technologies in prioritized economic sectors, have been strengthened (GEF US\$ 305,000; co-finance US\$ 534,430).

66. The objective of this project component is to strengthen policy support, institutional capacities and delivery mechanisms for the adoption of low-emission energy technologies in Guyana targeting: (i) the national power sector and utility GPL; (ii) public energy end-users, specifically buildings; and (iii) private businesses and the residential sector. Specifically, this outcome will develop a roadmap to prepare the national electricity sector for incorporating third-party (renewable) energy generation within a defined timeframe (output 2.1.1). It further aims to mainstream EE and RE technologies into public procurement (output 2.2.3). Supportive outputs include access to international (climate) funding (output 2.2.2) and promotion and outreach among public officers (output 2.2.4). Where possible, this outcome builds forth on baseline initiatives, such as the announced retrofit program of Government buildings in Guyana, the regional REEBC program, and initiatives for RE electricity generation under PPA with GPL.
67. In the End-of-Project situation (EOP), it is expected that: (i) the policy framework for the delivery of RE/EE technologies in Guyana has been substantially improved³⁹; (ii) minimum criteria for RE/EE have been set in public procurement for at least four (4) technologies⁴⁰; (iii) OCC will have gained hands-on experience with the development of NAMA/GCF funding proposals, having submitted at least two (2) proposals; and (iv) at least three (3) partnerships have been established for the delivery for low-emission energy technologies in Guyana.

Output 2.1.1. Development and approval of a roadmap for the integration of low-emission energy technologies into the interconnected (DBIS) and local grid systems (GEF US\$ 120,000; co-finance US\$ 135,000).

68. This output aims to facilitate a high-level dialogue about the institutional framework of Guyana's power sector. With institutional support from UNDP, the Project's Technical Advisor will facilitate the establishment of a High-level Committee (HC) which unites the Ministry of the Presidency (MotP), the Ministry of Public Infrastructure (MOPI) and the Ministry of Finance (MF).⁴¹

³⁹ As measured by the GEF TT indicator.

⁴⁰ Indoor lighting, air conditioners, solar water heaters; public lighting.

⁴¹ The MF assumes the role of Senior Beneficiary of the Project.

69. The purpose of this dialogue is to create understanding and consensus about the necessary steps for moving towards a low-emission electricity sector in Guyana. Key issues include, among others: (i) governance and delivery capacity of energy sector; (ii) mandates and business models; (iii) ownership of the transmission and generation assets for the (DBIS) and local grid systems; (iv) financial guarantees to back-up PPA contracts with GPL; and (v) dispatch of RE generators in function of established criteria (including marginal cost). Political back-up is essential for senior management of the public sector entities, as well as other actors, to initiate the actions for improving delivery capacity. As such, the high-level dialogue is instrumental for operationalization of the objectives set forth in Guyana's GSDS in the energy domain. Especially in the Hinterland, one can question the appropriateness of a delivery chain focused only on the electricity service. Synergies can be sought with other sectors to generate more holistic development projects, which add value to the energy commodity, reduce costs at all stages of the implementation cycle, and allow attracting investment capital from outside the energy and infrastructure domain.
70. As a tangible product, the dialogue process will work towards a roadmap for improving the delivery capacity of the national electricity sector, with a view reducing inefficiencies related to coordination and information gaps. The dialogue process will be facilitated by the Technical Advisor, complemented with an external energy expert (to provide technical advice and recommendation on sector governance).
71. To feed the dialogue, progress made under Outcome 1.1 will be presented to the high-level stakeholders. It will further review the necessary steps for increasing the share of low-emission energy systems in the national electricity matrix and select and endorse business modalities (envisagedly: IPP/PPA, DG, net metering and billing). This plan will provide the basis for implementing the DREI methodology under Outcome 1.1.
72. Specifically, GEF funds under this output will cover the costs of: (i) one Project Technical Advisor (international consultant) to provide technical advice and facilitate the dialogue process; (ii) one contract with specialized firms or individuals to provide inputs and advice on sector governance; (iii) one or more contracts with specialized firms, institutions or individuals for technical advice on specific aspects; and (iv) costs of international and domestic travel.

Output 2.1.2. Coordination and enhancement of methodologies and approaches to finance low-emission energy projects (GEF US\$ 70,000; co-finance US\$ 299,430).

73. This output aims to: (a) improve coordination of energy-related funding requests and initiatives; and (b) enhance the approaches, specific skills and methodologies required for adequate structuring of energy projects. Activities to be implemented include: (i) providing specific inputs for an energy sector financing strategy, to be endorsed by the GOG; (ii) the delivery of workshops on energy project finance to key stakeholders including GEA, HECL, GPL, OCC and selected ministry staff; and (iii) the adaptation of methodologies and approaches to energy project finance for Guyanese context.
74. This output will engage with multi- and bilateral agencies and initiatives in the country, including GIZ, IDB, and the Japan-Caribbean Climate Change Partnership (J-CCCP) implemented by UNDP. OCC and UNDP will jointly lead the coordination efforts. Specific viewpoints, best practices and recommendations will be extended to the highest GOG level (see output 2.1.1) to add to the momentum needed for developing a mature vision on climate finance for the energy sector. GEF funds will be used for: (i) hiring of one or more experts in climate finance for technical advice; and (ii) contractual services for adaptation of project finance methodologies to the Guyanese context.

Output 2.1.3. Mainstreaming of low-carbon energy technologies into procurement mechanisms of the public sector (GEF US\$ 85,000; co-finance US\$ 50,000).

75. This output aims to integrate energy efficiency (EE) criteria and the use of renewable energy (RE) technologies into procurement mechanisms of the public sector (category 3 projects). As a minimum, it will target: (i) electric appliances and lighting for interior use in public buildings; (ii) public lighting; (iii) the use of solar water heaters; and (iv) rooftop PV systems. The immediate focus of this output will be aligned with the retrofitting program of public buildings as announced by the Government. Proposed criteria however will be widely applicable to buildings such as public offices (Ministries and decentralized public agencies), municipal buildings, schools, hospitals, and public markets.

76. The National Procurement and Tender Administration (NPTA)⁴² is a key actor for the application and enforcement of public procurement regulation. Applicable legislation is set by the national Procurement Act (2003) and its Regulation and Amendment Regulations (2004). This output aims to set specific criteria for EE and RE utilization, to be referenced in the mentioned Regulation. Underpinning the proposals, cost-benefit analysis will be prepared and submitted for evaluation by policy makers, specifically the Ministry of Finance.
77. It is proposed to follow a two-tier approach for incorporating EE/RE into public procurement: (i) mandatory measures with a short payback period that can be funded from an entity's operational budget; this first tier is aimed at eliminating obsolete technologies and practices from public buildings; (ii) measures with a longer payback period, which would usually require dedicated financing schemes, including performance-based contracting; this would apply to more capital-intensive equipment and retrofitting projects.
78. Activities under this output will draw upon baseline work by the Guyana National Bureau of Standards (GNBS)⁴³. The latter is working with the CARICOM Regional Organisation for Standards and Quality (CROSQ) to develop a standard that will address minimum energy performance for refrigerators, air conditioners, and lighting. This standard shall ensure that all appliances imported into Guyana and the CARICOM Region are labelled providing information about energy consumption, an energy guide or rating, brand name and country of origin. Another relevant baseline is the Regional Energy Efficiency Building Code (REEBC) Project, partnered with the GIZ-REETA programme and receiving GEF support through the Energy for Sustainable Development (ESD) in Caribbean Buildings Project⁴⁴. Finally, GEA has built up significant hands-on experiences with auditing of public buildings for Government entities.
79. GEF funding will be used for: (i) one Project Technical Advisor (international consultant) to provide technical advice and for liaison between key stakeholders; and (ii) one or more contracts with specialized firms or institutions for specification of EE/RE criteria, amendment of applicable processes and updating of manuals and guidelines in use by public entities.

Output 2.1.4. Promotion of renewable energies and energy efficiency among public officers, sector organizations, private enterprises and other stakeholders (GEF US\$ 30,000; co-finance US\$ 50,000).

80. This output aims to establish partnerships between energy sector entities (GPL, HECl, GEA), with external stakeholders, with a view on increasing delivery capacities, exploit synergies and add value to interventions with an energy nexus. Potential partnerships include: (1) GPL and GWI for reducing energy losses; (2) GPL and Guyana Rice Development Board (GRDB) for exploring joint ventures for IPP; (3) HECl and cell phone companies for incorporating PV generators into hybrid grids under PPA or DG contract; (4) Project team, HECl and GIZ for hybrid grid development in Region 1; (5) Project team, HECl, Bartica and OCC for hybrid grid development in Region 7; (6) Project team, NPTA and GNBS for mainstreaming of green procurement; (7) Regional partnership between national RE/EE repository and peer entities in CARICOM region
81. As mentioned, improved coordination and delivery of GPL, HECl and GEA is a transversal aspect of the Project and specifically addressed under outputs 1.1.3 and 2.1.1. The external partnerships (1, 2) include large energy consumers (GWI, rice sector); the project will assist GPL to engage with these actors for jointly developing project proposals and leveraging investment capital (joint ventures). In the Hinterlands, a similar approach (3) will be followed to draw interest of private firms to supply surplus energy to local utilities under a power-purchase contract.⁴⁵ Integrated project development is expected to increase delivery capacity and add value to the electricity services, which provides an entry point for mobilising investment capital (4, 5).
82. With respect to green procurement (6), the Project's TA will engage with CARICOM and GIZ initiatives on MEPS for buildings and appliances and include NPTA and GNBS into the envisaged working groups. Acknowledging the pivotal role of GEA in this field, the Project will complement institutional capacities and establish a workplan to insert selected low-emission technologies into public procurement. Finally, the Project

⁴² See: www.npta.gov.gy

⁴³ See: <http://www.gnbsgy.org/>

⁴⁴ Source: <https://www.crosq.org/index.php/media-and-resources/itemlist/tag/energy%20efficiency>.

⁴⁵ In fact, most isolated town grids developed around a private company (e.g. mining) but fell in disarray after the private activity closed.

will actively engage with actors such as CROSQ and CAREC⁴⁶ to tap into the regional knowledge base (7); in this aspect, a formal partnership between the national repository (envisagedly implemented by GEA) and peer institutions in the region, is pursued.

83. Advocacy efforts by the Project team encompass ongoing engagement with stakeholders and awareness raising activities targeting institutional energy end-users about the benefits energy conservation and RE/EE. Limited GEF funds are assigned for promotional material, participation in seminars and regional events. GEF funds can be used to finance: (i) publication and printing of promotional material; (ii) contributions to hosting of events; (iii) organization and hosting of workshops; and (iv) incidental travel costs to relevant events.

Component 3. Deployment of low-emission energy technologies.

Outcome 3.1: Innovative business and financing models for low-emission energy technologies have been demonstrated in prioritized economic sectors (GEF US\$ 717,172; co-finance US\$ 5,250,000).

84. This component pursues the preparation, installation, commissioning and monitoring of selected low-emission energy projects in Guyana under innovative business and financing models. The categories considered are: (1) on-grid renewable energy (RE) generation for public electricity supply in the DBIS grid; (2) on-grid RE generation for public electricity supply in local (hybrid) grids; (3) EE and energy management measures for public buildings and services (such as water pumping and street lighting) connected to the DBIS grid; and (4) small-scale, off-grid RE generators delivering health and educational services, as well as energy for income-generation such as food processing and cold storage.
85. GEF support for category 1 and 2 projects is guided by UNDP's DREI methodology. This project component aims to test and demonstrate some of the proposed business models and the contractual arrangements (as developed under Component 1) and extract lessons for their improvement. The main result will be the operationalization of the IPP modality for RE-generators based on a transparent power purchase agreement (PPA) or partnership with GPL to supply the DBIS. Point of departure is the current interest by GPL to develop 3 MW solar PV under an IPP. Worthwhile noting is the current private sector initiative for developing a 26 MW wind farm near Hope Beach under a PPA, which demonstrates the upscaling potential of on-grid RE power generation.
86. With some downscaling, the IPP/DG arrangements for the DBIS grid can also be applied to category 2 projects (local, hybrid grids). Available technologies include existent diesel, solar PV, battery storage and micro-hydro. External generators that can provide additional generating capacity include for example small agro-industries and private solar systems (such as owned by cell phone operators). A key result will be the demonstration of RE-based electricity generation in hybrid grids with the application of intelligent control. The challenge for these local grids is to devise a solid governance and operational model enabling technical optimization and feeding in of multiple (small-scale) generators. The Project will build upon baseline initiatives including work by HECL, GEA and GIZ in the Mabaruma area (Region 1) involving investment in grid-tied solar PV, battery storage and micro-hydro, and the development of a "clean energy infrastructure" in Bartica as a model for replication (Region 7).
87. Category 3 involves energy-efficiency (EE) measures in on-grid public assets and services including: (i) retrofitting of Government buildings; (ii) municipal markets, public services and lighting in selected towns; and (iii) energy-efficiency measures for public water pumping and drainage services. Interventions include energy management systems (ISO 50001) and the introduction of equipment such as solar water heaters, efficient lighting, ventilation and air conditioning, and electric water pumps.
88. Category 4 concerns the use of small-scale, off-grid RE-and EE-technologies required for public health services, schools, potable water, and food processing and cold storage facilities. Technologies include: solar-PV with battery storage, energy-efficient (LED) lighting, small electric pumps, refrigerators. Basic services typically do not generate financial returns but can have high, positive socio-economic impact (community-level health and education services; small-scale (food) production facilities). Although insignificant in terms of global GHG emission reductions, RE/EE technologies are a key asset for operational sustainability and the prevention of

⁴⁶ The CARILEC Renewable Energy Community, see: <http://community.carilec.org/login>

local pollution due to fossil fuels. Given its relevance in the development context of Guyana, it is justified to include this category in support of the GSDS.

89. The approach followed to deliver this Outcome will address: (i) the lack of capacity for developing a pipeline of high-quality project proposals; (ii) weak institutional capacities to ensure effective project implementation cycles and enforce quality standards; (iii) generally lack of input data for integrated project design (covering the energy, economic, social, environmental and gender domains), and (iv) a lack of tradition and methodologies to verify system performance and impacts.
90. With a view on RE/EE development, the Project will establish a core team of Support Experts (SEs) who will operate in selected regions under the leadership of the Project's TA. The SEs will provide needed staff capacity and specific know-how to support municipalities (and other identified energy end-users) to develop project proposals that meet minimum quality standards. The SEs will actively collect and/or generate the data to fill current information gaps. This arrangement (TA plus two SEs) will be used for project categories 2, 3, and 4. Since on-grid RE generation with GPL (category 1) is essentially pursued for the energy supply side, local presence is not deemed necessary.
91. The Project team will further establish, or engage in partnerships to build synergies with the objective to make more effective use of scarce human resources and save project development costs (such as travel) to the extent possible. A clustered approach is proposed to capitalize on baseline initiatives and add value to them. The Project will hire specialized services and consultancies for implementing pre-feasibility studies and technical designs as a basis for public procurement (EPC) and develop full feasibility and final engineering studies for direct execution. Funding will also be available for supervision and for ensuring quality assurance and compliance with UNDP and GEF safeguards. (output 3.1.1) Specialized equipment and/or services are foreseen to measure and verify the performance of installed technologies over a defined period of time (output 3.1.3). The experiences and information collected (including social and gender aspects) will be used for enhancement of project development processes to continually reduce inefficiencies and increase delivery capacities (see Component 2).
92. Given the increased focus on technical assistance and enhancing delivery capacity, the project resources for co-investment in equipment (output 3.1.2) has been substantially reduced compared to the PIF. Financial de-risking by direct subsidies or incentives for category 1 projects would require funding volumes that outmatch this Project; such incentives are probably not necessary – hence assigning resources to this purpose would be premature and ineffective. Hence, some GEF funds will be reserved for the procurement of equipment and/or services to support category 2, 3 and 4 projects. An indicative menu of options includes: (1) procurement of control systems or services for optimized operation of hybrid grids; (2) design and implementation of energy management systems (ISO 50001) for public buildings, markets and water pumping systems; (3) procurement of RE/EE equipment for selected off-grid projects.
93. Based on the identified pilot project categories and associated delivery and investment mechanisms, a shortlist of pilot interventions was developed in line with existing baseline initiatives by national actors and agencies. The PPG found that current information and engagement with beneficiaries is insufficient to present mature project proposals (i.e. proposals at pre-feasibility stage covering technical, economic, social and environmental aspects and safeguards, including gender). Such information is not available or scattered and must therefore be collected and/or generated.
94. The Project proposes an initial phase of project development activities to engage with stakeholders, build working relations and partnerships, and produce relevant documentation for submission to UNDP, OCC and other stakeholders. In order to define a manageable work package, four initial projects are proposed: (1) 3 MW solar PV farm under PPA; (2) hybrid grid in Mabaruma including 400-kW solar PV; (3) Energy management (ISO 50001) and EE in New Amsterdam market; and (4) EE for GWI's electric water pumping network. These four projects can build upon some existing information and public sector funding; a brief description of each is provided in Annex C.
95. The second phase will target projects that require additional preparatory work by public actors and/or engagement with private sector entities and investors. Indicatively, the following initiatives are proposed: (5) interconnection of agro-industrial cogeneration plant (rice husk) to DBIS under PPA; (6) design of hybrid grid in

Bartica; (7) EE and energy management (ISO 50001) under Gov't public building retrofit program; and (8) development of pipeline of off-grid, community-level RE projects.

96. The proposed pilot projects are summarized in the following table. It is envisaged to complete project development phase 1 in over a time-span of 12 months, once the Project's TA has been contracted. The Project will build partnerships and draw upon enhanced coordination between public entities (as a transversal theme and specifically addressed by output 2.1.4) to improve project development and delivery.

Project Type				Identified Project Opportunities		Partners
				Phase I	Phase II	
1.	RE generation	on-grid	Public electricity supply	GPL call for 3 MW IPP solar PV farms under PPA supplying the DBIS	400 kW rice-husk based co-generation for IPP supplying to DBIS	Guyana Power & Light Third-party investors
2.				Hybrid grid in Mabaruma with diesel, 400 kWp solar PV, battery storage and 25 kW micro-hydro (Region 1)		HECI, GEA GIZ
3.	EE and energy management	on-grid	Electricity end-use		Hybrid grid in Bartica Program with diesel, solar PV and battery storage	Office of Climate Change Guyana Power & Light
					Government public building retrofit program	GEA GIZ/CARICOM
				Energy management and EE at municipal market New Amsterdam (Region 6)		Office of Climate Change Municipality
			EE for electric water pumping (DBIS)		Guyana Water Inc	
4.	RE generation and appliances	off-grid	Basic services Public administration Productive processes		Coastal and Hinterland villages – to be identified	Office of Climate Change Other Ministries HECI GEA

97. At End-of-Project, the combined GEF and co-financing resources shall translate into a total installed RE/EE capacity of about 4.4 MW, which will off-set at least 7.2 GWh/yr fossil-based electricity avoiding associated GHG emission of the order of 6,800 ton CO₂eq/yr. The available GEF resources shall be applied in such a way as to leverage investment capital from public and private equity and debt financing to the tune of approx. US\$ 6.5 million. The supported mix of RE/EE projects shall translate into the committed GHG emission reductions. As long as these two constraints are respected, the allocation of GEF funds over the project categories can be managed with certain flexibility.

Output 3.1.1. Feasibility studies and technical specification of low-emission energy projects in prioritized sectors (GEF US\$ 342,172; co-finance US\$ 250,000).

98. This output will establish a core team of two (2) Support Experts (SEs) who will operate in selected regions under the leadership of the Project's TA. GEF resources will be used to hire national experts that will act as local focal point within selected municipalities to create staff capacity and introduce the specific know-how for developing project proposals that meet minimum quality standards. This activity will address the identified capacity barriers among public energy end-users to develop detailed project requests, and further aims to alleviate the burden on the existing delivery channels (GEA and HECI) which are substantially overstretched.

The SEs will engage with local actors to generate, verify and consolidate information to fill current gaps (covering the energy, economic, social, environmental and gender domains).

99. The core team of the TA and SEs will primarily push forward a pipeline of category 2, 3, and 4 projects, which require an end-user perspective and are locally bound. Since on-grid RE generation with GPL (category 1) is essentially pursued for the energy supply side, local presence is not deemed necessary. Here, the TA will team up with GPL to review RE project development process; as and if appropriate, the SEs can be invoked to provide additional assistance.
100. As required, the Project will draw in specialized services and consultancies for implementing pre-feasibility studies and technical designs as a basis for public procurement (EPC) and develop full feasibility and final engineering studies for direct execution. Funding will also be available for supervision and for ensuring quality assurance and compliance with UNDP and GEF safeguards. In collaboration with GPL, the Project will carry out prefeasibility studies and technical design studies for on-grid RE generation for subsequent procurement.
101. Relevant procurement modalities include: (i) engineering, procurement and commissioning (EPC) under public investment; (ii) build-own-operate(-transfer) (BOO(T)) in combination with a power purchase agreement (PPA) with GPL, involving third-party investment; (iii) partnerships between GPL and a third party (public or private). The Project will deliver at least one (1) tender for grid-connected PV (3-MW solar farm) and one (1) for grid-connected biomass (rice husk) or wind energy. Similarly, GEF funds can support prefeasibility and technical studies underpinning investment in category 2 projects (hybrid grids) in association with the local HECL satellite utilities and/or GPL. Contractors must comply with processes established by the National Procurement & Tender Administration and published at Government websites.⁴⁷
102. Specialized services can further be contracted for to support in-house project development of EE initiatives in public buildings, including work to complement public energy audits in selected public buildings and public markets and the development of detailed plans for retrofitting of such premises. Essentially, it is proposed to view RE/EE equipment upgrades from an energy management perspective rather than isolated investments. A similar approach is recommended to continue upgrading of electric water pumping systems. This approach will enable to benefit from baseline work on energy management in Guyana and the CARICOM region and is aligned with the GWI EE pilot. Indicatively, the Project will prepare at least one (1) proposal for a public building retrofit; one (1) for a municipal EE initiative (market); and one (1) for electric water pumping.
103. The core team reserves some capacity to support the development of a pipeline of small-scale projects (category 4), basically under partnerships with parallel public and donor-funded programs, typically focused on community development. Initiatives under this category will be coordinated and selected by OCC and UNDP after consultation with the High-level Committee. It is envisaged to support a pipeline of at least five (5) small-scale proposals of this type.
104. GEF funding will cover the costs of: (i) hiring of Project Technical Advisor for drafting of TOR and to act as team leader for RE/EE project pipeline development; (ii) one international RE expert for technical backstopping and review of functional specifications and prefeasibility studies; (iii) two national consultants to act as Support Experts for RE/EE project pipeline service development; (iv) specialized services for delivery of feasibility and pre-feasibility studies and technical designs; (v) legal counselling and negotiations for PPA signature and securing of needed permits, as and if appropriate; (vi) travel budget for visiting of project sites. It is emphasized that this project output will draw upon the partnerships envisaged under Outcome 2.1 (outputs 2.1.2 and 2.1.4) to strengthen the overall delivery chain.

Output 3.1.2. Financing, installation and operation of low-emission energy projects (GEF US\$ 275,000; co-finance US\$ 5,000,000).

105. This output will provide financial resources for co-investment in selected low-emission energy technologies. Direct financial support (subsidy) for on-grid RE generation (category 1) is not foreseen as other de-risking measures are deemed sufficient and more effective. Given the high baseline costs of electricity production, the IPP and GPL should be able to agree upon a PPA price level that is acceptable to both parties. The available GEF resources under this project are too small to influence the market. Hence, a remaining financial risk

⁴⁷ See, as an example: <http://www.electricity.gov.gy>.

should be addressed by advocacy with the Ministry of Finance and multilateral lenders and guarantee providers. A guarantee for GPL for backing-up PPAs is deemed more necessary than a direct financial incentive for the IPP. This is addressed under Component 1.

106. For category 2 projects (hybrid grids), an indicative GEF grant funding of US\$ 100,000 is made available for co-investment, preferably for system control and optimization. Potential project sites include Bartica (Region 7) and Mabaruma (Region 1), among others. Co-investment for category 3 projects can be used to enable demonstration projects in public sectors or assets with a high replication potential (typically buildings, public services, markets, water pumping). These projects should be viewed from the energy management perspective allowing for cost recovery and progressive investment in upgrading. Indicatively, the GEF funds will be used for implementation and initial operation of the management programme up to a total of US\$ 100,000. Grant funding to the tune of US\$ 75,000 is available to deliver a first batch of small-scale off-grid projects (category 4). Synergies with donor-funded programs in the fields of sanitation, health and education shall be sought.⁴⁸

Output 3.1.3. Supervision and monitoring of performance and operation of installed energy systems (GEF US\$ 100,000; co-finance US\$ 0).

107. Verification of system performance and the delivery of expected benefits (energy production, GHG emission reductions, socio-economic benefits) has traditionally not received due attention. This output encompasses the implementation of monitoring systems for measurement and verification of the savings delivered by installed RE and EE technologies. The system will include data loggers for collection, storage and transmission of technical data on the operation modus of installed equipment, including energy production and consumption. A measurement and reporting protocol will be developed and implemented. For each device installed, the baseline situation will be re-assessed in order to determine the effective GHG emission reductions achieved.
108. A differentiated approach is needed for the 4 project categories. For on-grid RE generation, performance should be monitored as integrated part of the PPA (commercial domain, and information must be shared with the grid operator (GPL) for stabilization of the network and dispatch of the generator base (technical domain. Aggregated information can feed into sector reporting and national information systems, including protocols for verification and reporting of national GHG emissions (MRV). If not already incorporated into the frameworks for PPA/DG (component 1), this output can fund expert services to design a monitoring protocol, preferably mainstreamed into national systems, under guidance of OCC.
109. Similarly, hybrid grids include dispatch control and data collections systems enabling to retrieve technical information from the installed systems, including time series of energy production for all connected generators (diesel and renewable). This will enable tracking of GHG emission reductions in real-time compared to a defined baseline. This output can assist in designing and formalizing information protocols, which may become part of periodic audits of local utilities; this is essentially a governance issue. The data collected can feed into the MRV.
110. Public sector EE projects (category 3) developed from an energy management perspective will have performance tracking mainstreamed into the management plan. Equipment for data collection shall be included in project design and is funded under output 3.1.2. The associated GHG emission reductions can be estimated based on the collected data. For successful implementation, an energy management system requires an accountable person or entity (typically the building operator). This person would be responsible for collecting the data and sharing thereof with the MRV. Verification of data can be incorporated into audit of the public building, municipality, or public services (such as GWI).
111. For small-scale, off-grid projects (category 4), this output will provide funds for the procurement, installation and operation of data collection systems (data loggers, power meters, data processing and telemetry for on-distance monitoring). The purpose of monitoring is to ensure adequate technical performance, verify local O&M activity, and take corrective action if needed. The technical information can feed into a more comprehensive monitoring of the envisaged (essentially socio-economic) impact.

⁴⁸ Note that, potentially, some of these projects may be eligible for funding under the GEF Small Grants Programme (SGP).

112. GEF funds will be used: (i) to hire expert services to design a monitoring and data exchange protocol (as part of a broader MRV); (ii) training of public energy building operators on data collection and sharing; (iii) installation costs of data measurement equipment for small-scale projects; (iv) operating costs of data systems; and (v) travel costs for periodic physical inspection of installed systems. It is suggested to explore partnerships with technical schools and universities for the design and implementation of such system as part of their curriculum. Engineering students and technicians may also provide an effective means for training of local RE/EE system users (including operators of public buildings and markets; and energy-related community projects).

Component 4. Monitoring and Evaluation.

Outcome 4.1: The Project monitoring & evaluation plan has been implemented (GEF US\$ 105,000; co-finance US\$ 30,000).

113. Monitoring of project progress is essential for the adequate and timely delivery of results. This component covers project monitoring and oversight by UNDP in close coordination with OCC and the project partners, as well as mid-term review and terminal evaluation of the Project. This component takes benefit from the PPG experience to effectively mitigate fiduciary and implementation risks. Given the identified institutional limitations, this outcome will establish the necessary capacity and guidance to ensure that the envisaged Project Organisational Structure is effectively established and that conditions for RE/EE project development in full compliance with national and UNDP/GEF conditions and safeguards.

114. *Output 4.1.1. A monitoring and evaluation plan is designed and implemented, including reporting on progress indicators and targets (GEF US\$ 50,000; co-finance US\$ 15,000).*

115. This output will provide the necessary capacity for successfully guiding the Project through the inception phase and ensure that the Project's institutions are successfully created – specifically the High-level Committee. GEF funds will be available for hiring of an international consultant to: (i) provide guidance to OCC and UNDP; (ii) engage with key Government partners to establish the High-level Committee; (iii) finalise the Terms of Reference of key project staff in dialogue with OCC and UNDP; (iv) detail the Project's M&E Plan; (v) provide recommendations for the annual work plan (AWP) and procurement plan for the first Project Year; and (vi) support UNDP and OCC during the IW and drafting of IR. The PMU and the TA will take full control of the Project implementation process once they are under contract and operational.

116. Gender aspects will be a key focus area and it is anticipated that a gender analysis be carried out during the inception phase to facilitate gender mainstreaming throughout project implementation.

117. GEF funding under this output encompasses: (i) hiring of one international M&E specialist guidance and support during the Project's inception phase and backstopping of the monitoring process; (ii) hiring of one national gender expert; and (iii) travel costs.

Output 4.1.2. *Mid-term Review and GEF Terminal Evaluation are conducted (GEF US\$ 40,000; co-finance US\$ 15,000).*

118. This project output consists of the Mid-term Review (MTR) and the GEF terminal evaluation (TE), to be carried out by a team of independent national and international consultants. The MTR will be carried out by UNDP after 18 months of project implementation. The TE will be conducted during the last three months before operational closure of the Project. GEF funds will be used for: (i) hiring of international, independent evaluation expert for implementing the TE; and (ii) one national consultant to participate in TE evaluation team and provide logistical support.

Output 4.1.3. *Project audits are conducted (GEF US\$ 15,000; co-finance US\$ 0).*

119. This project output encompasses annual project audits in line with UNDP guidelines. GEF funds will be used to cover the cost of these services.

Project execution and partner responsibilities

120. In order to enhance delivery, the Project will work closely with the key sector entities GPL, HECI and GEA. These entities will each assign a focal person to the Project for technical inputs, discussion and review. Under Component 2, several partners will need to work collectively to push forward green procurement, hence a working group is proposed with representatives from GEA, complemented with NTPA and GNBS. Political back-up and consent for pilot project selection is envisaged through the High-level Committee (HC) including, as a minimum, MotP, MF, and MOPI.
121. The HC, engagement with GPL, HECI and GEA, as well as external partnerships are critical to ensure full ownership of the Project's objectives and increase the capacity to deliver the anticipated low-emission energy technologies. Similarly, they are expected to provide the inputs for fine-tuning of Terms of Reference to their specific needs, within the boundaries of the Project and the specific constraints and timelines set in the Annual Work Plans.

Expected results

Socio-economic and environmental benefits

122. The Project is committed to the delivery of social, economic and environmental benefits as a result of a portfolio of RE/EE project to be developed during its lifetime. It is expected that, at project termination, an aggregated capacity of 4.4 MW will be installed and fully operational, composed over the 4 project categories. The social and economic benefits are significant in terms of individuals receiving low-emission electricity, and accrued fiscal budget (monetary) savings.
123. The following table summarises the key expected benefits. A brief outline of the calculation methodology is provided in Annex C. It must be noted that accurate information to calculate input parameters is not available and must be generated as part of a pre-feasibility study for each identified project. No data was available for making an educated estimate for gender differentiation. The uncertainty margin in the results is estimated at about +/- 25%.

PROJECT SUMMARY OF BENEFITS	
Individuals who benefit from low-emission energy technology:	10,000 people
Gender ratio (first estimate)	50% / 50%
Total energy volume (production / savings)	7,000 MWh per year
Savings on public expenditure	USD 850,000 per year
Total direct GHG emission reductions	68,000 tCO ₂ eq (over 10-year period)

Stakeholder engagement plan

124. The PPG has identified the following stakeholder categories: National Government (MotP, MOPI, MF); Public Agencies and Companies (GEA, NTPA, GPL, HECI, GNBS, NICIL); Beneficiaries (Regional and town councils, local electricity companies; GWI, NDIA, private investors, and commercial banks (GBTI)); Academic Institutions (NAREI, University of Guyana); International Organizations (CARICOM, other UN Agencies); Multilateral Banks and Bilateral Donor Agencies (IDB, CDB, JICA, GIZ); and Civil Society (PSC, GCCI, GMSA, GAPE, GRDB). The Project has engaged with a number of them and expand their involvement during Project execution.
125. A Stakeholder Engagement Plan is presented in Annex F. This Plan can be used as a tool for reference, to be updated annually. The Plan is a starting point for the design of a Project communication strategy and specific communication plans, under the responsibility of the Project Manager.

Gender equality and empowering women

126. A Gender Analysis and indicative Gender Action Plan is attached as Annex G to this Project Document. As part of a general pattern of outdated and incomplete socio-economic data encountered during the PPG, access to gender data proved challenging. With a view on energy end-use, the variety in ethnic groups, urban and rural population, and Amerindian traditions require a differentiated approach to address gender issues. While women's rights are generally protected in national Law, gender equality is hampered by cultural factors and views on male and female roles in society. Women tend to be in a disadvantaged position to register property and access loans.
127. While demographic data show gender parity, male labour participation is much higher (75%) than female (41%) which is reflected in gender-differentiated national income (US\$ 9,397 and US\$ 4,346 respectively). Since the 1980s, a shift has taken place from the primary sector to manufacturing and tertiary sector. Female participation in agriculture and fishing dropped between 1992 and 2002 from 28.1% to 5.5%, while manufacturing rose to 27.2% of total employed women.⁴⁹ The impact of migration of Guyanese on society and the economy can hardly be underestimated, as the number of Guyanese living outside the country (primarily in the USA and Canada) is larger than the resident population.
128. Although the available data are probably not very accurate, the electricity and gas sector appears as strongly male-dominated – a fact seen in most countries in the region. As of 2016, women are more likely to complete secondary education and show higher enrolment in tertiary education. Hence, more women may enter the energy sector in the near future. In climate change and environment, women are well represented. The PPG could not engage sufficiently close with target beneficiary groups (both in the energy supply chain and the end user market) to enable a detailed gender action plan.
129. This void is addressed during Project implementation by continuous screening of project activities on gender issues, including: (i) inclusion of gender dimensions during review and formulation of business models; (ii) cross-sectoral approaches to RE/EE market development, e.g. linkages with education and health programmes, small and medium enterprise (SME) development, micro-credits; (iii) adequate access to electricity is included as a performance parameter for hybrid grids enabling effective business operations for male and female-run sectors (small manufacturing workshops, cold storage, restaurants; (iv) secure gender (ethnicity and age) balance of the training participants; and (v) ensure final selection of pilot projects is gender-balanced. Overarching measures include the nomination of a gender-responsive member in the Project Board, and a continuous effort to collect data on a sex-disaggregated basis.
130. The gender indicative Plan is showed in the table below. The dimensions of the plan might change depending on the final version of the National Gender and Social Inclusion policy, which is being finalized by the Ministry of Social Protection. Adjustments might be also made depending on the recommendations of the Monitoring and Evaluation Plan and the Gender expert hired for this activity:

Project Component	Gender Dimensions
Overall Project Objectives: To promote low-emission energy technologies across prioritized sectors, thereby increasing competitiveness and climate-resilience of the national economy.	Collect data on a sex-disaggregated basis, for instance during demand assessment for site selection, and on potential beneficiaries.
Component 1: Sustainable business and financing models for low-carbon energy technologies.	
Outcome 1.1: The feasibility of low-carbon energy investments has been enhanced through innovative business and financing models reducing project risks.	<ul style="list-style-type: none"> Encourage inclusion of gender dimensions during review and formulation of business models to promote investment in RE/EE technologies. Consider gender-specific needs and impacts that will be relevant to ensure that both men and women will have the same opportunities offered by the supportive instruments and financial incentives (e.g. income differences between men and women).

⁴⁹ Data for 1992 from 1995 National Policy Paper on Women; data for 2002 from UN Women Portal (<http://caribbean.unwomen.org/en/caribbean-gender-portal/guyana>). Original sources are 1992 and 2002 Census.

Project Component	Gender Dimensions
	<ul style="list-style-type: none"> • Evaluate opportunities for cross-sectoral approaches to RE/EE market development, e.g. linkages with education and health programmes, small and medium enterprise (SME) development, micro-credits, etc. • Ensure adequate access to electricity is included as a performance parameter for hybrid grids enabling effective business operations for male and female-run sectors (small manufacturing workshops, cold storage, restaurants, among others). • Include section on gender dimensions (paying attention to differentiated needs due to age) in the training needs assessments (TNAs) of the trainings and workshops. <ul style="list-style-type: none"> - Make efforts to secure gender (and age) balance of the training participants as well as local and international trainers and technical consultants when possible. - Promote participation of qualified women in the trainings (e.g. outreach / promotion through women's engineering associations, use of gender-responsive languages, etc.) - Address conditions that may prevent women participation in the trainings such as security, knowledge gap and resources when possible (e.g. through scholarships, reduced fee, specialized courses, safe transport).
Component 2: Policy framework and institutional capacities.	
<p>Outcome 2.1: Policy instruments and institutional capacities for implementing low-carbon energy technologies in prioritized economic sectors, have been strengthened.</p>	<ul style="list-style-type: none"> • Encourage inclusion of gender dimensions during policy review and formulation of e.g. new strategies and instruments to promote investment in RE/EE technologies. • Whenever the enhancement of staff competence requires the selection of training participants, efforts should be made to secure gender (ethnicity and age) balance of the training participants. <ul style="list-style-type: none"> - Consider the integration of gender aspects in the training content/ curriculum (e.g. indicating information in a sex-disaggregated manner, separate session on gender dimensions). For this purpose, ensure inclusion of gender expert. - Select best practice examples showcasing gender mainstreaming/ women's empowerment. • Ensure that gender dimensions are considered in developing the dissemination campaign. For instance, pay attention to gender neutral language, include gender-disaggregated data whenever possible, make sure to reach both women and men, etc. • Consider gender dimensions in the working groups. This includes but is not limited to: Promoting gender balance of the group members and gender awareness of staff. In cases where the project does not have direct influence, gender-sensitive recruitment will be encouraged.
Component 3: Deployment of low-emission energy technologies.	
<p>Outcome 3.1: Innovative business and financing models for low-emission energy technologies have demonstrated in prioritized economic sectors.</p>	<ul style="list-style-type: none"> • Ensure inclusion of gender dimension in the feasibility studies, supportive studies and technical designs, e.g. environmental and social impact assessments – ESIA's, conducted under this project. • Ensure high quality of the baseline by consulting energy-gender expert. • Ensure final selection of pilot projects is gender-balanced.
Component 4: Monitoring and evaluation (M&E)	
<p>Outcome 4.1: The Project monitoring & evaluation plan has been implemented.</p>	<ul style="list-style-type: none"> • Nominate a gender-responsive member in the Project Board • Make sure that the knowledge management tools used by the Project are able to collect data in a gender-disaggregated manner.

Project Component	Gender Dimensions
	<ul style="list-style-type: none"> • Consider monitoring not only participation of women but also project impacts on different beneficiary groups (e.g. change on income; change in skills) where relevant. • Include gender dimension into mid-term and final evaluation reports.

Risks and assumptions

131. The Project design has attempted to mitigate fiduciary (2), sustainability (3, 5, and 7) and development (6 and 8) risks to the extent possible. Fiduciary risks relate to efficient and effective project delivery and compliance with UNDP and GEF safeguards and accounting standards; this is addressed in the Project design by avoiding unnecessary linkages between components so that several processes can be started in parallel. Adherence to IW/IR and AWP milestones will be monitored by UNDP CO to avoid accumulation of delays over time. The position of a Technical Advisor is created to speed up drafting of TOR and review and supervision of deliverables and to speed up processes, especially related to liaison with Government parties and pilot projects. Additional capacity is created for guiding the Project through the inception phase and create the Project’s institutional arrangements, specifically the High-level Committee.
132. Sustainability risks include the availability of finance for investment post-project, malfunctioning of implemented RE/EE systems and operational issues. Financing for upscaling is addressed as part of the Project’s exit strategy, which proposes to leverage international carbon finance as an alternative to the GRIF (as identified as PIF stage). To avoid technical risks, mature technologies will be preferred. Rather than demonstrating new technologies, the Project will be focused on integration of the value chain to diminish project risk profiles and reduce transaction costs.
133. Development risks relate to management of low-emission energy technologies, professionalization of the supply chain, and the acceptance of innovative business models. These risks are addressed under the Project’s technical assistance activities, which are aimed at the development of robust business models and advocacy for these. Notwithstanding, financial sustainability of proposed energy solutions remains a challenge in Guyana. This risks is mitigated by focusing in those areas where proper contractual arrangements can be established, such as PPAs between private RE generators and GPL in the DBIS grid and in local grids where good governance conditions are in place. Yet, it is assumed that both GPL and private RE project developers have a genuine interest in entering into a PPA under mutually beneficial terms and within a constrained time period.
134. A critical assumption for the Project design is the existence of political support for the power sector to move towards a low-emission, decentralized electricity matrix and approval of a work agenda for developing the regulatory instruments as envisaged by the Project. Without such support, GPL, HECI and GEA staff will be hand-bound and unable to participate as planned. There is a high risk (1) that policy makers do not respond to Project requests and/or do not assign it the priority needed. The Project does not have the capacity to control this risk; however, as a mitigation measure, the Project design foresees in the establishment of a High-level Committee with the double purpose of: (i) conveying information on Project progress on PPA/DG regulation to the key ministries (MotP, MF, MOPI) and obtaining their feedback in a structured manner; and (ii) initiating a formal process to set up a road map for the low-emission energy transition, thereby adding to the existing momentum (baseline activities).
135. The Project assumes a fairly positive investment climate to remain in place in Guyana during the Project period and subsequent upscaling phase. If this assumption proves not valid, the obtained social, economic and environmental benefits may be lower than expected. This risk (4) is mitigated by periodic monitoring of the country’s investment profile. Also, financially robust investments will be prioritized to avoid excessively long payback periods.
136. The overall social and environmental risk profile of the Project has been assessed as “moderate” (see SESP, Annex E). Although not a direct effect of the pursued energy systems, substantial consequential impact may take place as part of the baseline project, notably in inland town developments (such as Bartica). The Project provides an opportunity to accompany the Government to implement high environmental standards and ensure environmental sustainability. Compliance with UNDP and GEF standards shall be a minimum condition

for the Project to participate in such development. Minor risks have been identified concerning potential gender inequalities, exposure to the effects of climate change, normal safety risks, and potential involvement of indigenous peoples. These risks can be controlled by proper design of the field projects, ensuring inclusion of female beneficiaries and engagement with the Amerindian population (if applicable).

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Mgmt. response	Owner	Submitted, updated by	Last Update	Status
1	The effective adoption of a low-emission energy strategy by the GoG would prove not feasible.	PIF	Governance and public policy	P = 4; I = 4	<p>The viability of developing a low-emission energy strategy has been re-assessed during the PPG. It is concluded that the policy context is currently insufficiently clear, hence such a strategy would be premature. Relevant factors include the exploitation plans for offshore oil and natural gas which will likely bring a change into overall energy policy, including a reduced dependency on imported fuels. With presidential elections taking place mid-project (2020), a formal energy strategy will unlikely be supported before that date.</p> <p>In addition, persisting weaknesses in the power sector's institutional and legal framework continue to be a barrier for the implementation of on-grid renewable energy systems, as exemplified by the Amaila Falls case (165 MW), but also the Kato microhydro project (300 kW) supported by the GOG/IDB GEF-5 project.</p> <p>To mitigate these risks, the Project will assume a process- rather than product-oriented approach. It will facilitate a high-level dialogue to promote consensus about key issues in Guyana's power sector that need to be addressed. This includes fine-tuning of sector entity mandates (GPL, HECI, GEA) and setting of key conditions (legal, technical) to enable independent Power Production (IPP). It is proposed to structure this dialogue towards the development of a road map for the integration of low-emission energy technologies into the main (DBIS) and local grids. A more ambitious target may be set after the presidential elections and if deemed appropriate – to be assessed by the Project's Mid-Term Review.</p>	Project Manager/ Technical Advisor	UNDP CO	Submission date	Updated
2	The Implementing Partner would fail to implement the Project in alignment with established procedures and guidelines	PIF	Fiduciary	P = 4; I = 4	<p>Expedite project delivery is of paramount importance for UNDP and the GEF involving the full procurement cycle: (i) design and approval of TORs for goods and services, (ii) selection of suppliers, (iii) issuance of contracts, (iv) supervision, (v) review and acceptance of products, and (vi) regular payments. Specifically, the items (i), (ii) and (v) are prone to delay if the decision-making process is not efficient and convergent. To mitigate this risk, the following measures will be implemented:</p> <p>(1) The Project will contract a Project Technical Advisor (TA) who will act as an intermediary between UNDP, OCC, other Government entities, GPL and GEA, to provide expert inputs for decision making and ensuring convergent execution processes (TORs, reviews, consensus building).</p> <p>(2) The Project design will be made as specific and operational as possible, to be reflected in the Annual Work Plans (AWPs), budget revisions and Procurement Plans (PPs). Quality Assurance</p>	UNDP Programme Manager	UNDP CO	Submission date	Updated

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Mgmt. response	Owner	Submitted, updated by	Last Update	Status
3	Financing for upscaling of investment in low-emission energy projects would not become available as expected.	PIF	Sustainability	P = 2; I = 4	<p>by UNDP CO and the RCU LAC will be enforced ensuring that the periodic, annual preparation of AWP is respected. Special attention will be given to the Inception Phase of the project to ensure that the UNDP/GEF project cycle is correctly understood and the IP is duly prepared to deliver AWP and PPs.</p> <p>(3) UNDP will provide support services on a cost-recovery basis in response to Government request. By consequence, the implementation modality will be an "Assisted NIM".</p> <p>During the PPG it became clear that a flow of investment capital from GRIF towards low-emission energy projects, has become uncertain for reasons beyond control of the Project, UNDP and OCC.⁵⁰ As an alternative, the Project will support initiatives to access (climate) funding for low-emission technologies such as NAMAs and Green Climate Fund (GCF) project concepts. It will further engage with the private sector to enhance commercial loan/credit facilities for such technologies (such as GBTI's Green Loan scheme). With these mitigation actions in place, the risk of not having access to public finance for investment, is deemed moderate.</p> <p>There is sustained interest from the private sector to invest in RE/EE technologies. Given current high energy costs, a private market will continue to develop. However, the mobilisation of investment towards on-grid RE generators will depend on the political will to open the sector to private investment. While this goal has been re-confirmed in Guyana's GSDS, the actual operationalisation of IPPs is still to be seen.</p>	Project Manager/ Technical Advisor	UNDP CO	Submission date	Updated
4	The general investment climate in Guyana would refrain multilateral banks from supporting the private sector.	PIF	Finance	P = 2; I = 2;	<p>Guyana has demonstrated to be economically fairly stable during recent years. However, the economy relies heavily on commodity exports, while imports of fuel products represent a large burden for the national economy and the fiscal budget. Moreover, prospects of world trade and trends in the international financial system are uncertain. The Project builds on the assumption that the investment climate in Guyana will be stable and may improve in the near/medium future. Recent oil discoveries are expected to boost the investment climate in Guyana, but this factor cannot be controlled by the Project.</p> <p>As a mitigation measure, it is proposed to monitor this risk and adjust Project ambitions and investments accordingly, if required.</p>	UNDP Programme Manager	UNDP CO	Submission date	Updated
5	Technical issues would impede	PIF	Sustainability	P = 2; I = 3	<p>Technical failure and underperformance of installed energy systems may result in financial losses, and undermine the</p>	Project Manager/	UNDP CO	Submission date	No change

⁵⁰ This because the GRIF is funded under bilateral agreements with (currently) the Government of Norway.

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Mgmt. response	Owner	Submitted, updated by	Last Update	Status
	envisaged energy systems to perform successfully.				credibility of low-emission energy solutions among end-users, financiers and policy makers. Moreover, there is no tradition for monitoring of installed RE systems in the country and sharing of data. This risk is mitigated by opting for mature technologies, leaving installation and operating skills as the most critical success factors. Given: (i) Guyana's track record for solar energy; (ii) planned activities for enhancing the delivery chain under the Project; and (iii) programmed monitoring of system operation plus corrective actions if required; technical risks are assessed as low.	Technical Advisor			
6	Social, cultural and gender issues would adversely affect acceptance of low-emission energy technologies.	PIF	Development	P = 1 I = 3	Social and cultural factors tend to undermine the financial sustainability of energy sector business models. GPL is confronted with high commercial losses (due to pilferage) while in regional grids (small towns) diesel-based power generation is subsidized. In some places (Linden) people were used to very cheap energy and are not willing to accept a price level that reflects true costs. Notwithstanding, businesses seek alternative energy sources as a way to cut the high costs of grid electricity and keep up with international competition (such as in the rice sector) – renewable energies seem to be a fully accepted choice, but technical assistance for project delivery is still a major barrier. No direct mitigation measures are foreseen. The Project aims to develop sustainable business models for local grids (including interconnected, small RE-systems), which can contribute to establish a dialogue with local communities offering high-quality energy based on a transparent cost model. No specific gender issues were found affecting the uptake of low-emission energy technologies. During the Project design phase (PPG) no interventions are foreseen involving Amerindian land and/or people. Guyana's Amerindian population may have different expectations and/or different perception of delivered project benefits. . When appropriate, engagement with indigenous peoples and their institutions (including Ministry of Indigenous Peoples' Affairs) must take place.	Project Manager/ Technical Advisor	UNDP CO	Submission date	Updated
7	Sustainability of installed energy systems and services would be affected by the impact of climate	PIF	Sustainability	P = 2 I = 2	The vulnerability of pilot projects will be assessed during the design and engineering stage. Specifically, the impact of floodings will be taken into account during the design phase. By incorporating climate resiliency in the conceptual design and engineering phase, operational availability should be guaranteed for the full lifetime. As such, this risk is deemed low.	Project Manager/ Technical Advisor	UNDP CO	Submission date	Updated

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Mgmt. response	Owner	Submitted, updated by	Last Update	Status
8	Innovative business models and financing schemes would not be adopted for upscaling of low-emission energy technologies	PPG	Development	P = 2 I = 5	<p>Based on the PPG, the Project will include the national grid systems (DBIS and local grids in smaller towns) in its scope, with the objective to enable IPP/PPA schemes, net metering/billing and partnerships to increase RE-based electricity generation. Identified options include: solar-PV farms, co-generation in rice-mills, rooftop PV and micro-hydro. Among other options, national utility GPL will be the off-taker of produced electricity</p> <p>However, there is little experience with such arrangements: detailed procurement and contract modalities are not in place and have not been tested. Another critical aspect is ownership and investment in the transmission infrastructure. The Project aims to address these barriers to enable the interconnection of pilot RE-generators to the grid (solar-PV, co-generation) as a test case for upscaling.</p> <p>Although the project pursues a more hands-on approach, policy support remains a key success factor. As a mitigation measure, the Project aims to establish a high-level dialogue among key ministries to ensure political back-up and create consensus about necessary step. The Project's Technical Advisor will play a key role for liaison and advocacy. Since political buy-in cannot be directly controlled by the Project, this risk is deemed as high.</p>	Project Manager/ Technical Advisor	UNDP CO	Submission date	No chart

Partnerships

137. The establishment of partnerships is critical to improve the current low delivery levels by sector agents and catch up with market development and demand for high-quality, affordable and clean electricity. Improved coordination between the sector entities (GPL, HECL, and GEA) will assist in removing inefficiencies. A cross-sectoral dialogue at the highest level is facilitated to strengthen mandates and roles, and to reflect upon business approaches that can add value to make the electricity supply more expedite and self-sustained. For more information, please refer to output 2.1.4.
138. Partnerships are tracked in the Project's Results Framework and feed into the UNDP Strategic Plan 2017-2021: "...support innovative platforms that strengthen collaboration with Governments as well as with civil society and the private sector".⁵¹

South-South and Triangular Cooperation (SSTrC)

139. The Project will build upon parallel initiatives in the field of energy efficiency and renewable energies in the region, specifically initiated by CARICOM (CROSQ), and the exchange of knowledge products developed with financial support from GIZ and the Japan-Caribbean Climate Change Partnership (J-CCCP). Another platform is the regional community of energy professionals and utility engineers CAREC, which was funded by a GEF grant through UNDP and the Government of Norway.

Sustainability and scaling up

140. The Project is targeted at the utilization of low-emission energy technologies for on-grid energy generation, as well as interventions in prioritized sectors with a strong energy nexus (public services such as health and education, water pumping and drainage). The utilization of domestic, renewable energy sources offers a range of social, economic and environmental benefits that go beyond the economic savings and avoided GHG emissions by replacing fossil fuels. Mainstreaming of low-emission technologies into national climate change policy instruments and sector plans is a key mechanism for sustainability and upscaling of the Project's outcomes.
141. The Project will introduce innovative business and financing models making investment in low-emission energy projects more attractive for project developers and/or suppliers, investors, and downstream (institutional and business) energy consumers. Innovative elements include the De-risking Renewable Energy Investment (DREI) framework, developed by UNDP applied to IPPs, energy performance contracting for EE solutions and rooftop PV, and a reconsideration of roles and responsibilities for project ownership, operation, and finance.
142. The economic potential for up-scaling of low-emission technologies in Guyana is very substantial; an educated guess is that at least 50% of current primary energy use can be saved or replaced by domestic, small-scale renewable energy technologies. The main barriers are finance, technical know-how and sheer implementation capacity. A reference is provided by the private energy generation market, which makes up about 40% of total power demand. Here, upscaling potential of low-emission technologies during the Project's impact horizon (10 years) would be of the order of 20% of current electricity consumption.
143. The technical sustainability of the delivered energy projects will largely depend on the quality of after-sales services and proper care and maintenance by the end-users. The Project will pay attention to quality assurance as part of the delivery chain. Assuming a due diligence process during preparation and implementation of energy projects, user acceptance and technical sustainability are expected to be positive. At the policy and development level, sustainability primarily encompasses the adoption of a robust, economically sound energy policy by the Government, and the operationalization of a long-term financing strategy.

⁵¹ UNDP Strategic Plan 2017-2021, p.6

V. PROJECT MANAGEMENT

Cost efficiency and effectiveness

144. The cost-effectiveness of the GEF resources, considering only direct GHG emission savings, would be US\$ 26 per ton CO₂eq. Indirect emission reductions are expected to occur by replication of IPP tenders issued by GPL and HECL. A replication factor of 3.0 is assumed, delivering 204 kton CO₂eq indirect emission reductions; combined GHG emission reductions are thus of the order of 272 kton CO₂eq. The cost-effectiveness based on the combined emission reductions is estimated at US\$ 6.4 per ton CO₂eq.

Project management

145. Reference is made to the Project Organisation Structure presented in Section VIII. The Project will be implemented by the Office of Climate Change of the Ministry of the Presidency (MotP-OCC), which will assign the Project Director (PD) who holds formal ownership of the Project. A dedicated Project Management Unit (PMU) will be established and hosted by OCC at their premises. The PMU will consist of a full-time Project Manager (PM) and a Project Assistant (PA) who can be full- or part-time. The PMU will be supported by a full-time Technical Advisor (TA). The OCC will provide office space and make available telecommunication and internet facilities; the Project can fund essential office tools (laptop, digital camera) if needed. Travel arrangements will be made as needed in accordance with UNDP and Government guidelines for safety and efficiency.
146. Two working groups are foreseen under Component 2 and 3. It is proposed that the High-level Committee will gather at the MotP-OCC premises; the technical committee can meet at the participant's offices on a rotating basis. Special meetings can be hosted by OCC.
147. Among other duties, the Technical Advisor will facilitate and structure the engagement with the High-level Committee and provide orientation on energy sector policy and provide recommendations for enhancing the coordination and organisation of energy sector actors, on behalf of UNDP and the Project. The TA will further be responsible for implementing project component 3. Specifically, the TA will lead and supervise the development of a project pipeline of low-emission energy interventions (categories 1-4). The TA will be team leader and resource person for the Support Experts (SEs) that will be assigned to selected municipalities as local focal points for developing of energy projects (initially in Mabaruma, Region 1, and New Amsterdam, Region 6). Two (20 SEs are foreseen, to be hired with GEF resources under project output 3.1.1.

Agreement on intellectual property rights and use of the logo on the project deliverables and disclosure of information

148. To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy⁵² and the GEF policy on public involvement⁵³.

⁵² See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

⁵³ See https://www.thegef.org/gef/policies_guidelines

VI. PROJECT RESULTS FRAMEWORK

This project will contribute to the following Sustainable Development Goal (s):

Directly: SDG 7 (Affordable and Clean Energy);

Indirectly: SDG 1, 2 SDG 3 (Good Health and Well-Being), SDG 4 (Quality Education), SDG 6 (Clean Water and Sanitation), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure).

This project will contribute to the following country outcome included in the UN-MSDF 2017-2021:

Priority Area 4 (A Sustainable and Resilient Caribbean - Policies and programmes for climate change adaptation, disaster risk reduction, and universal access to clean and sustainable energy in place);
Indicators: (a) Percentage of new businesses in which RE services account for at least 50% of the energy mix (SDG 7.2.1 - RE share in the total final energy consumption); (b) Number of countries where sustainable, resilient and resource-efficient construction and retrofitting has been carried out in at least one Government building (SDG11.c.1 – Percentage of financial support that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings).

This project will be linked to the following output of the UNDP Strategic Plan 2017-2021:

Signature solution 5: Close the energy Gaps.

	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Data Collection Methods and Risks/Assumptions
Project Objective: To promote low-emission energy technologies across prioritized sectors, thereby increasing competitiveness and climate-resilience of the national economy.	(A) Achieved direct GHG emission reductions by pilot investments and replication (ton CO2eq/yr)	0	0	6.800 tCO2eq/yr	Means of Verification: (A) Estimate based on project parameters and educated guess for baseline development; (B) Official documents listing adopted policy/legal instruments; (C) Project reports and official information (GEA, GPL); (D) Assessment of implemented projects; site visits and interviews. Risks: 1-8 ⁵⁴ Assumptions: Sustained commitment of national authorities and sector entities; project activities can be implemented as planned; adequate technical and operational performance of installed energy systems.
	(B) Policy and regulatory framework in support of low-emission energy technologies energy deployment (scale...) ⁵⁵ ; including IPP/DG modality.	1 (no policy/regulation in place)	2 (policy discussed and proposed)	4 (policy adopted but not enforced), with IPP/DG modality applied by GPL.	
	(C) Installed RE-based electricity generating capacity ⁵⁶ under IPP, DG and/or partnership arrangements connected to the DBIS grid (MW)	0 MW	1.0 MW	4.4 MW	
	(D) Number of beneficiaries directly benefitting from improved access to energy and energy services (male/female)	None (0)	1,000	10,000 (50%/m/50%f)	

⁵⁴ Risk numbers refer to the Risk Matrix (Annex H).

⁵⁵ Indicator is aligned with the GEF-6 CC TT template, using a rating scale 0..5.

⁵⁶ With support from the Project.

<p>Component/Outcome: 1.1 The feasibility of low-carbon energy investments has been enhanced through innovative business and financing models reducing project risks.</p>	<p>(1a) Status of contractual arrangements for IPP, DG and net metering/billing (%)</p>	<p>IPP, DG and net metering/billing modalities discussed (0%)</p>	<p>Contractual arrangements for IPP, DG and net metering/billing partially designed (50%).</p>	<p>Model contracts for IPP, DG and net metering/billing developed and approved by GPL and private sector (100%)</p>	<p><u>Means of Verification:</u> Model contracts and IPP/DG business models <u>Risks:</u> 1,2 <u>Assumptions:</u> Sustained commitment of national authorities and sector entities; project activities can be implemented as planned.</p>
<p>Component/ Outcome 2.1 Policy instruments and institutional capacities for implementing low-carbon energy technologies in prioritized economic sectors, have been strengthened.</p>	<p>(1b) Status of grid code for access of IPP and DG (%)</p>	<p>Grid code not adapted to RETs (0%)</p>	<p>Grid code designed and detailed (70%)</p>	<p>Grid code designed, developed, and approved by GPL (100%)</p>	<p><u>Means of Verification:</u> IPP/DG business models; official documents (GPL) with grid code. <u>Risks:</u> 1,2 <u>Assumptions:</u> Sustained commitment of national authorities and sector entities; project activities can be implemented as planned.</p>
<p>Component/ Outcome 2.1 Policy instruments and institutional capacities for implementing low-carbon energy technologies in prioritized economic sectors, have been strengthened.</p>	<p>(1c) Status of governance and business model for hybrid grids (%)</p>	<p>Governance and business models for local grids are diffuse, poorly codified and financially not sustainable (0%)</p>	<p>Explicit, financially sustainable governance and business model for local grids, developed (50%)</p>	<p>Explicit, financially sustainable governance and business model for local grids, developed, discussed and ready for application (100%).</p>	<p><u>Means of Verification:</u> Detailed hybrid grid business and governance models; project reports <u>Risks:</u> 1,2,6 <u>Assumptions:</u> Sustained commitment of national authorities and sector entities; project activities can be implemented as planned.</p>
<p>Component/ Outcome 2.1 Policy instruments and institutional capacities for implementing low-carbon energy technologies in prioritized economic sectors, have been strengthened.</p>	<p>(2a) Status of roadmap for incorporating third-party RE generators into national electricity grid (%)</p>	<p>No roadmap (0%)</p>	<p>Roadmap process consolidated with actions and timeframe being discussed at high level (50%)</p>	<p>Roadmap with specific timeframe, targets and actions approved and being implemented by GOG (100%).</p>	<p><u>Means of Verification:</u> Road map document; official publications and RE targets; project reports and meeting minutes <u>Risks:</u> 1,2,6 <u>Assumptions:</u> Sustained commitment of national authorities and sector entities; project activities can be implemented as planned.</p>
<p>Component/ Outcome 2.1 Policy instruments and institutional capacities for implementing low-carbon energy technologies in prioritized economic sectors, have been strengthened.</p>	<p>(2b) Number of technologies with minimum energy performance criteria in public procurement (-).</p>	<p>None (0)</p>	<p>Four (4) technologies⁵⁷</p>	<p>Four (4) technologies</p>	<p><u>Means of Verification:</u> Tender documents (GEA); NPTA guidelines; project reports <u>Risks:</u> 1,2,3,5,7,6 <u>Assumptions:</u> Sustained commitment of national authorities and sector entities; project activities can be implemented as planned; public sector investment in RE/EE is continued.</p>
<p>Component/ Outcome 2.1 Policy instruments and institutional capacities for implementing low-carbon energy technologies in prioritized economic sectors, have been strengthened.</p>	<p>(2c) Number of partnerships established for the delivery for low-emission energy technologies in Guyana (-).</p>	<p>None (0)⁵⁸</p>	<p>One (1) partnership</p>	<p>Three (3) partnerships</p>	<p><u>Means of Verification:</u> Project reports and agreements <u>Risks:</u> 1,2,3,4</p>

⁵⁷ Indicatively: indoor lighting, air conditioners, solar water heaters; public lighting.

⁵⁸ A draft NAMA for greening of towns has been prepared but not completed.

<p>Component/ Outcome 3.1 Innovative business and financing models for low-emission energy technologies have demonstrated in prioritized economic sectors.</p>	<p>(3a) Number of open bidding and procurement processes successfully implemented by GPL and HECI with direct support from the Project (-).</p>	<p>None (0)</p>	<p>At least one (1) process implemented for IPP generation in DBIS grid</p>	<p>At least two (2) processes implemented for IPP generation in DBIS grid; At least one (1) process for DG in a regional (town) grid.</p>	<p>Assumptions: Sustained commitment of national authorities and sector entities; project activities can be implemented as planned.</p> <p>Means of Verification: Published RE/EE tender and procurement documents and underlying project files; project reports Risks: 1,2,3, 4, 7, 9 Assumptions: Sustained commitment of national authorities and sector entities; project activities can be implemented as planned.</p>
<p>(3b) (i) RE-based electricity generation capacity added to the main grid (MW); (ii) associated, verified annual energy production (MWH/yr)</p>	<p>(i) 0 MW; (ii) 0 MWH/ yr</p>	<p>(i) 1.0 MW; (ii) 1,200 MWH/yr</p>	<p>(i) 4.4 MW; (ii) 7,000 MWH/yr</p>	<p>Means of Verification: Official documents (GPL, HECI, GEA); project reports; site visits; performance monitoring data. Risks: 1-9 Assumptions: Sustained commitment of national authorities and sector entities; project activities can be implemented as planned; project co-finance for investment is made available.</p>	<p>Means of Verification: Investment in RE/EE equipment under the Project; Communication by project partners to UNDP/OCC; site visits. Risks: 3,4,5,9 Assumptions: Sustained commitment of national authorities and sector entities; project activities can be implemented as planned.</p>
<p>(3c) Total volume of public and private capital leveraged for investment in low-emission energy technologies (US\$)</p>	<p>US\$ 0</p>	<p>US\$ 2 million</p>	<p>US\$ 8.5 million</p>	<p>Means of Verification: Investment in RE/EE equipment under the Project; Communication by project partners to UNDP/OCC; site visits. Risks: 3,4,5,9 Assumptions: Sustained commitment of national authorities and sector entities; project activities can be implemented as planned.</p>	<p>Means of Verification: MTR report; project reports. Risks: None Assumptions: Project activities can be implemented as planned; Project Management is aware of sustainability aspects and risks and able to define adequate mitigation measures.</p>
<p>Component/ Outcome 4.1 The Project monitoring & evaluation plan has been implemented.</p>	<p>(4a) (i) Mid-term review (MTR) (0/1); (ii) Follow-up on recommendations to enhance project effectiveness and sustainability (0/1)</p>	<p>(4a) (i) No MTR (0); (ii) No recommendations (0)</p>	<p>(4a) (i) MTR completed (1); (ii) Follow-up on recommendations completed (1)</p>	<p>(4a) (i) MTR completed (1); (ii) Follow-up on recommendations completed (1)</p>	<p>Means of Verification: TE report; project reports. Risks: None Assumptions: Project activities can be implemented as planned; Project Management is aware of sustainability aspects and risks and able to define adequate mitigation measures.</p>
<p>(4b) Terminal Evaluation document (0/1);</p>	<p>(4b) No Terminal Evaluation (0).</p>	<p>(4b) No Terminal Evaluation (0).</p>	<p>(4b) Terminal Evaluation completed (1)</p>	<p>(4b) Terminal Evaluation completed (1)</p>	<p>Means of Verification: TE report; project reports. Risks: None Assumptions: Project activities can be implemented as planned; Project Management is aware of sustainability aspects and risks and able to define adequate mitigation measures.</p>

VII. MONITORING AND EVALUATION (M&E) PLAN

149. The Project results as outlined in the project Results Framework (RF) will be monitored annually and evaluated periodically during project implementation to ensure the Project effectively achieves these results. Project-level Monitoring and Evaluation (M&E) will be undertaken in compliance with UNDP requirements as outlined in the [UNDP POPP](#) and [UNDP Evaluation Policy](#). The UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the [GEF M&E policy](#) and other relevant GEF policies⁵⁹.
150. In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop (IW) and will be detailed in the Inception Report (IR). This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point (OFP) and national/regional institutes assigned to undertake project monitoring. The GEF OFP will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools) across all GEF-financed projects in the country. This is preferably achieved for example by using one national institute to complete the GEF Tracking Tools for all GEF-financed projects in the country, including projects supported by other GEF Agencies.⁶⁰

Oversight and monitoring responsibilities

151. **Project Manager (PM):** The Project Manager is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Manager will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Manager will inform the Project Board, the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.
152. The PM will develop Annual Work Plans (AWPs) based on the Multi-Year Work Plan (MYWP), including annual output targets to support the efficient implementation of the Project. The MYWP will be prepared during inception and annexed to the Project Document. The PM will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support Project implementation (e.g. ESMP, gender action plan, stakeholder engagement plan etc.) occur on a regular basis.
153. **Project Board (PB):** The Project Board will take corrective action as needed to ensure the Project achieves the anticipated results. The PB will hold project reviews to assess the performance of the Project and appraise the AWP for the following year. In the Project's final year, the PB will hold an End-of-Project review to capture lessons learned and discuss opportunities for scaling-up, and to highlight results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project Terminal Evaluation (TE) report and the management response.
154. **Implementing Partner (IP):** The Implementing Partner (here: the Office of Climate Change) is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The IP will strive to ensure project-level M&E is undertaken by national institutes, and is aligned with national systems so that the data used and generated by the Project supports national systems.
155. **UNDP Country Office (CO):** The UNDP Country Office will support the PM as needed, including through annual supervision missions. These missions will take place according to the schedule outlined in the AWP. Mission reports will be circulated to the Project team and PB within one month of the mission. CO will initiate and organize key GEF M&E activities including the annual GEF PIR, the independent Mid-term Review (MTR)

⁵⁹ See https://www.thegef.org/gef/policies_guidelines

⁶⁰ See https://www.thegef.org/gef/gef_agencies

and the independent Terminal Evaluation (TE). The CO will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

156. The UNDP CO is responsible for complying with all UNDP project-level M&E requirements as outlined in the [UNDP POPP](#). This includes ensuring that the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed, and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the CO and the PM.
157. The UNDP CO will retain all M&E records for this Project for up to seven (7) years after Project financial closure to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (GEF IEO).
158. UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as needed.
159. Audit: The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies on NIM implemented projects.⁶¹

Additional GEF monitoring and reporting requirements

160. Inception Workshop and Report (IW/IR): A Project Inception Workshop shall be held within two (2) months after the Project Document has been signed by all relevant parties to, amongst others with the purpose to:
 - a) Re-orient project stakeholders to the Project strategy and discuss any changes in the overall context that influence Project strategy and implementation;
 - b) Discuss the roles and responsibilities of the Project team, including reporting and communication lines and conflict resolution mechanisms;
 - c) Review the Results Framework and finalize the indicators, means of verification and monitoring plan;
 - d) Discuss reporting, M&E 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 in M&E;
 - e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; SESP, Environmental and Social Management Plan and other safeguard requirements; project grievance mechanisms; the gender strategy; the knowledge management strategy, and other relevant strategies;
 - f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
 - g) Plan and schedule PB meetings and finalize the first year AWP.
161. The Project Manager will prepare the IR no later than one (1) month after the IW. The IR will be cleared by CO and the UNDP-GEF RTA, and will be approved by the PB.
162. GEF Project Implementation Report (PIR): The PM, CO, and the UNDP-GEF RTA will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of Project implementation. The PM will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR.
163. The PIR submitted to the GEF will be shared with the PB. The UNDP Country Office will coordinate the input of the GEF OFP and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

⁶¹ See guidance here: <https://info.undp.org/global/popp/frm/pages/financial-management-and-execution-modalities.aspx>

164. Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects, as well as regional (such as CAREC) and global platforms.
165. GEF Focal Area Tracking Tools: The GEF Climate Change Tracking Tool will be used to monitor global environmental benefits. The baseline Tracking Tool – submitted to GEF at CEO Endorsement and annexed to this Project Document – will be updated by the Project Manager/Team⁶² and shared with the MTR and TE consultants before the required review/evaluation missions take place. The updated GEF Tracking Tool(s) will be submitted to the GEF along with the completed Mid-term Review report and Terminal Evaluation report.
166. Independent Mid-term Review (MTR): An independent MTR process will begin approx. 18 months after Project start. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the Project's duration. The terms of reference, the review process and the MTR report will depart from the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the [UNDP Evaluation Resource Center \(ERC\)](#). The GEF OFP and other stakeholders will be involved and consulted during the process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTR report will be available in English and will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and approved by the Project Board. Note that for a Medium-Size Project, the MTR is not mandatory but given the challenges of the present Project, an objective, independent MTR process is highly recommended.
167. Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The TE process will begin three (3) months before operational closure of the Project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the Project is close enough to completion for the evaluation team to reach conclusions on key aspects such as Project sustainability. The PM will remain on contract until the TE report and management response have been finalized. 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](#). As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF OFP and other stakeholders will be involved and consulted during the process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Board. The TE report will be publically available in English on the UNDP ERC.
168. The UNDP CO will include the planned project TE in its Evaluation Plan, and will upload the final TE report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report, and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project TE report.
169. Final Report: The Project's terminal 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 PB during an End-of-Project review meeting to discuss lesson learned and opportunities for scaling up.

⁶² Not by the evaluation consultants hired to undertake the MTR or the TE.

Mandatory GEF M&E Requirements and M&E Budget

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ⁶³ (US\$)		Time frame
		GEF grant	Co-financing	
Output 4.1.1				
Inception Workshop	UNDP CO	1,000	2,000 (in-kind, OCC)	Within two months of project document signature
Inception Report	PM	0	None	Within two weeks of inception workshop
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	UNDP CO	None	None	Quarterly, annually
Risk management	PM, UNDP CO	0	None	Quarterly, annually
Monitoring of indicators in project results framework	PM & TA	5,000	2,000 (in-kind, OCC)	Annually before PIR
GEF Project Implementation Report (PIR)	PM, UNDP CO and UNDP-GEF team	0	6,000 (in-kind, OCC)	Annually
Lessons learned and knowledge generation	PM & TA	0	None	Annually
Monitoring of environmental and social risks, and corresponding management plans as relevant	PM, UNDP CO	2,000	2,000 (in-kind, OCC)	On-going
Stakeholder Engagement Plan	PM, UNDP CO	0	3,000 (in-kind, OCC)	On-going
Gender Action Plan	PM, UNDP CO, UNDP GEF team	2,000	0	On-going
Addressing environmental and social grievances	PM, UNDP CO	0	0	On-going
Project Board meetings	PB, UNDP CO, PM	0	0	At minimum annually
Supervision missions	UNDP CO	None ⁶⁴	None	Annually
Oversight missions	UNDP-GEF team	None ⁶⁵	None	Troubleshooting as needed
Output 4.1.2				
Mid-term GEF Tracking Tool to be updated by PM	PM & TA	0	0	Before mid-term review mission takes place.
Independent Mid-term Review (MTR) and management response	UNDP CO, PM(U) and UNDP-GEF team	0	USD 15,000	Between 2 nd and 3 rd PIR.
Terminal GEF Tracking Tool to be updated by PM	PM & TA	0	0	Before terminal evaluation mission takes place
Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response	UNDP CO, PM(U) and UNDP-GEF team	40,000	0	At least three months before operational closure
Output 4.1.3				
NIM Audit as per UNDP audit policies	UNDP CO	20,000	None	Annually
TOTAL indicative COST Excluding project team staff time, and UNDP staff and travel expenses		US\$ 70,000	US\$ 30,000 ⁶⁶	

⁶³ Excluding project team staff time and UNDP staff time and travel expenses.

⁶⁴ The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.

⁶⁵ See footnote 64.

⁶⁶ Of which 15,000 cash (UNDP co-finance) and 15,000 in-kind (OCC)

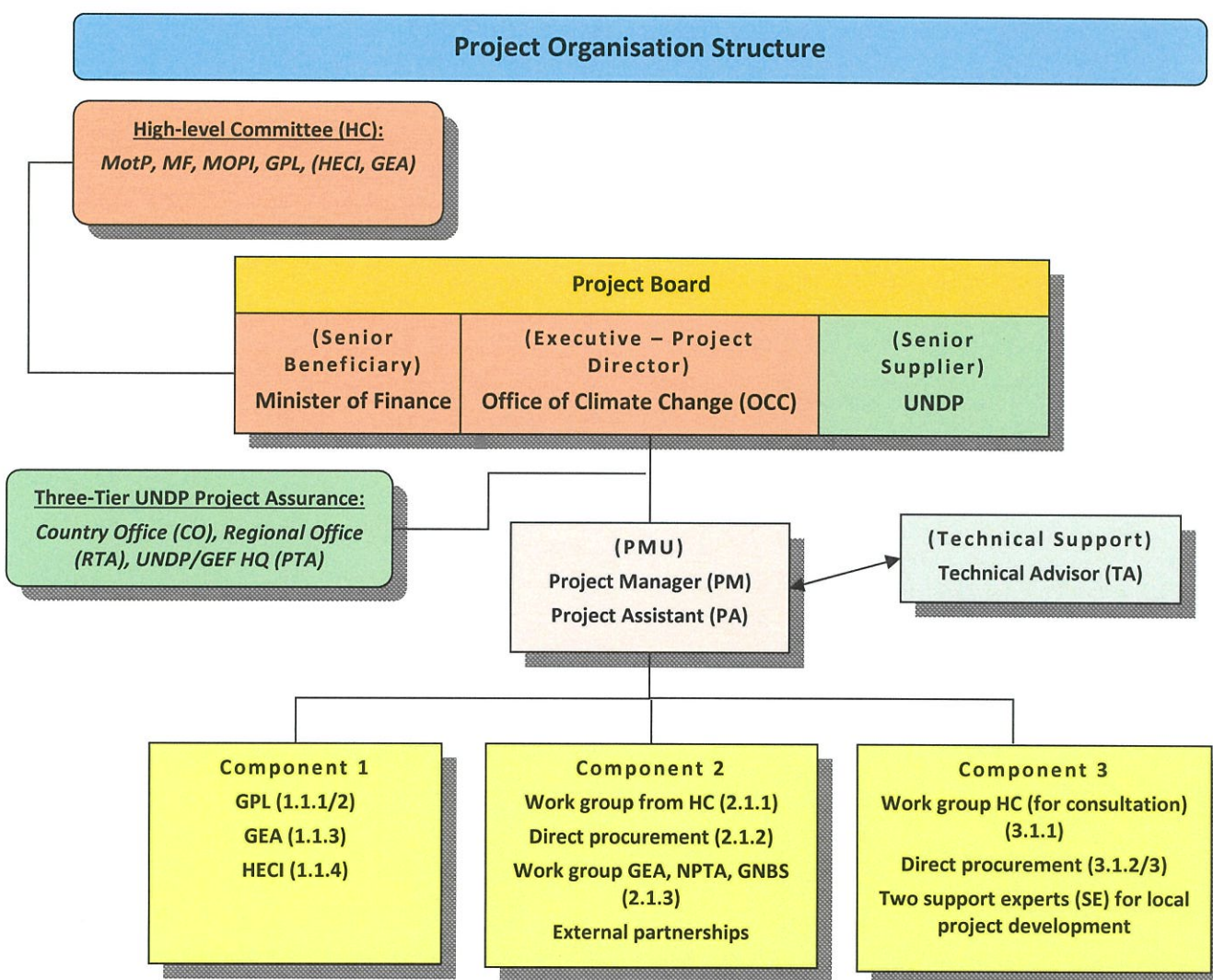
VIII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

170. The Project will be implemented following UNDP’s National Implementation Modality (NIM) and according to the Standard Basic Assistance Agreement between UNDP and the Government of Guyana signed May 3, 1977, and the UN Multi-Country Sustainable Development Framework in the Caribbean 2017-2021. The Implementing Partner (IP) for the Project is the Office of Climate Change of the Ministry of the Presidency (MotP-OCC). The IP is responsible and accountable for managing the Project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources. The IP is responsible for:

- Approving and signing the Multi-Year Work Plan (MYWP);
- Approving and signing the Combined Delivery Report (CDR) at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

Project organisation structure

171. The project organisation structure is as follows:



Project Board

172. The Project Board (PB)⁶⁷ will serve as the Project's decision-making body. It will meet according to necessity, at least twice each year. The PB is responsible for making by consensus, management decisions when guidance is required by the Project Manager, including recommendations for UNDP/IP approval of project plans and revisions, and addressing any project level grievances. In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Programme Manager.
173. Specific responsibilities of the Project Board include the following:
- a) To provide strategic guidance to the Project, ensuring it remains within any specified constraints;
 - b) To assess and decide to proceed on project changes through appropriate revisions;
 - c) To ensure coordination with various government agencies and their participation in project activities;
 - d) To ensure commitment of human resources to support project implementation, arbitrating any issues within the project;
 - e) To ensure coordination between various donor funded and government funded projects and programmes;
 - f) To approve annual project work plans and budgets, at the proposal of the Project Manager;
 - g) To agree on PM's tolerances⁶⁸ as required and to provide ad-hoc direction and advice for situations when PM's tolerances are exceeded;
 - h) To approve any major changes in project plans or programmes;
 - i) To oversee monitoring, evaluation and reporting in line with GEF requirements;
 - j) To review the Project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
 - k) To appraise the annual PIR, including the quality assessment rating report;
 - l) To provide guidance on new project risks, and agree on countermeasures and management actions to address these;
 - m) To address project issues as raised by the PM;
 - n) Ensure that UNDP Social and Environmental Safeguards Policy is applied throughout project implementation; and, address related grievances as necessary; and
 - o) Negotiate solutions between the project and any parties beyond the scope of the project.

Composition of Project Board

174. The composition of the Project Board must be such as to cover the following roles:
175. **Executive:** The Executive is an individual who represents Project ownership as the Project Director (PD). The Executive will chair the Project Board. This role can be held by a representative from the Government Cooperating Agency or UNDP. The Executive for this Project is the Office of Climate Change (OCC).
176. The Executive is ultimately responsible for the Project, supported by the Senior Beneficiary and Senior Supplier. The Executive's role is to ensure that the Project remains focused throughout its life cycle on achieving its objectives and delivering the outputs that will contribute to higher level outcomes. The Executive has to ensure that the project gives value for money, ensuring cost-conscious approach to the Project, balancing the demands of Senior Beneficiary and Senior Supplier.

⁶⁷ Another commonly used name is Project Steering Committee (PSC)

⁶⁸ The tolerance refers to the margin authorized to the PM to deviate from the approved AWP. Above this margin (for example 10% of the expected budget), PM must submit the case to the PB for approval.

177. Specific Responsibilities of the Executive include (as part of the above responsibilities for the PB):

- To ensure that there is a coherent project organisation structure and logical set of plans;
- To set tolerances in the AWP and other plans as required for the Project Manager;
- To monitor and control the progress of the project at a strategic level;
- To ensure that risks are being tracked and mitigated as effectively as possible;
- To brief relevant stakeholders about project progress; and
- To organise and chair Project Board meetings.

178. Senior Supplier: The Senior Supplier is an individual or group representing the interests of the parties concerned which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. The Senior Supplier role must have the authority to commit or acquire supplier resources required. If necessary, more than one person may be required for this role. Typically, the implementing partner, UNDP and/or donor(s) would be represented under this role. For this project, the Senior Supplier is UNDP Guyana.

179. Specific Responsibilities of the Senior Supplier include (as part of the above responsibilities for the PB):

- To make sure that progress towards the outputs remains consistent from the Supplier's perspective;
- To promote and maintain focus on the expected project output(s) from the point of view of Supplier management;
- To ensure that the Supplier resources required for the Project are made available;
- To issue Supplier opinions in the PB on implementing recommendations on proposed changes; and
- To arbitrate on, and ensure resolution of, any Supplier priority or resource conflicts.

180. Senior Beneficiary: The Senior Beneficiary is an individual or group of individuals representing the interests of those who will ultimately benefit from the Project. The Senior Beneficiary's primary function within the PB is to ensure the realization of project results from the perspective of project beneficiaries. The Senior Beneficiary role is held by a representative of the Government or civil society. The Senior Beneficiary for this Project is: the Minister of Finance (MF).

181. The Senior Beneficiary is responsible for validating the identified need and for monitoring that the solution will address those needs within the constraints of the Project. The Senior Beneficiary's role is to monitor progress against targets and quality criteria. This role may require more than one person to cover all the beneficiary interests. For the sake of effectiveness, the role should not be split between too many people. The choice of the Minister of Finance is motivated as follows: (i) energy savings in the public sector as well as reductions in generating cost by GPL and HECI translate into direct monetary benefits for the Treasury; (ii) the Ministry of Finance is a key stakeholder for long-term development strategy design and energy planning aimed at minimization of levelised costs of the electricity matrix; and (iii) the Ministry of Finance is a well-established institution with a clear mandate.

182. Specific Responsibilities of the Senior Beneficiary include (as part of the above responsibilities for the PB):

- To prioritize and contribute beneficiaries' opinions on Project Board decisions on whether to implement recommendations on proposed changes;
- To ensure that specification of the Beneficiary's needs is accurate, complete and unambiguous;
- To monitor Project activities at all stages to ensure that they will meet the Beneficiary's needs and that progress is made towards that target;
- To evaluate the impact of potential changes in the Project from the Beneficiary point of view; and
- To monitor risks to the beneficiaries frequently.

Project Manager

183. The Project Manager (PM) has the authority to run the Project on behalf of the PB and within the constraints laid down by the Board. The PM is responsible for day-to-day management and decision-making for the Project. The PM's primary responsibility is to ensure that the Project produces the results specified in the

Project Document, to the required standard of quality and within the specified constraints of time and cost. The Project Manager (PM), will be locally recruited following UNDP procedure, with input to the selection process from the Project partners. The position will be appointed by the IP and funded entirely from the Project. The Project Manager must be a different person from the IP representative in the PB.

184. Specific responsibilities of the PM include:

- To Provide direction and guidance to Project Team and Responsible Party(ies);
- To liaise with the PB to assure the overall direction and integrity of the Project;
- To identify and obtain any support and advice required for management, planning and control of the Project;
- To assume the Project administration;
- To plan the activities of the Project and monitor progress against the project Results Framework and the approved AWP;
- To mobilize personnel, goods and services, training and micro-capital grants to initiate activities, including drafting terms of reference and work specifications, and overseeing all contractors' work;
- To monitor events as determined in the project monitoring schedule plan/timetable, and update the plan as required;
- To manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
- To monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
- To assume the preparation and submission of financial reports to UNDP on a quarterly basis;
- To manage and monitor the Project risks initially identified, and submit new risks to the PB for consideration and decision on possible actions if required; to update the status of these risks by maintaining the Project Risk Log;
- To capture lessons learned during project implementation;
- To prepare the AWP for the following year; and update the Atlas Project Management module if external access is made available;
- To prepare the GEF PIR and submit the final report to the PB;
- Based on the GEF PIR and the PB review, to prepare the AWP for the following year;
- To ensure the MTR process is undertaken as per UNDP guidance and submit final MTR report to the PB;
- To identify follow-on actions and submit them for consideration to the PB; and
- To ensure the TE process is undertaken as per UNDP guidance and submit the final TE report to the PB.

Project assurance

185. UNDP provides a three-tier supervision, oversight and quality assurance role – funded by the GEF agency fee – involving UNDP staff in the Country Office and at regional and headquarters levels. Project Assurance must be totally independent of the Project Management function. The quality assurance role supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. The PB cannot delegate any of its quality assurance responsibilities to the PM. This project oversight and quality assurance role is covered by the UNDP in its function as the GEF Implementing Agency.

Governance role for project target groups

186. The Project is targeting a variety of groups, with different levels of decision-making:

- Energy sector staff, who will take part in Project working groups for technical advice and definition of project activities;
- Businesses and private sector individuals, who will provide advice to enhance the design of Project deliverables;

- Municipalities and community leaders, who are being engaged for the development of a pipeline of low-emission energy projects in their administrations; and
- Energy end-users: their interests and expectations will be assessed in off-grid areas through the local authorities and by direct engagement with civil society organisations and individuals.

IX. FINANCIAL PLANNING AND MANAGEMENT

187. The total cost of the project is USD 1,750,172. This is financed through a GEF grant of USD 1,750,172. In parallel co-financing including UNDP funding of USD 354,430 adds to the amount of USD 6,424,430, which brings the total projects input to a value of USD 8,174,602. UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the UNDP cash co-financing transferred to UNDP bank account only.

Parallel co-financing

188. Parallel co-financing: The actual realisation of project co-financing will be monitored during the Mid-Term Review and Terminal Evaluation process and reported to the GEF. The planned parallel co-financing will be as follows:

SOURCES OF PROJECT PARALLEL CO-FINANCING		
Name of co-financier	Type of co-financing	Amount (USD)
Office of Climate Change (OCC)	in-kind	650,000
Ministry of Public Infrastructure (MOPI)	equity	3,830,000
Town Council Bartica	equity	1,560,000
Town Council New Amsterdam	equity	30,000
UNDP	grants	55,000
UNDP J-CCCP	grants	299,430
TOTAL:		6,424,430

Direct project services

189. The UNDP, as International Agency for this project, will provide project management cycle services for the project as defined by the GEF Council. In addition, if the Government of Guyana may request UNDP direct services for specific projects, according to its policies and convenience. The UNDP and Guyana Government acknowledge and agree that those services are not mandatory, and will be provided only upon Government request. If requested the services would follow the UNDP policies on the recovery of direct costs. These services (and their costs) are specified in the Agreement (Annex M). As is determined by the GEF Council requirements, these service costs will be assigned as Project Management Cost, identified in the project budget. decisions of the UNDP's Executive Board on the Policy on Cost Recovery from Regular and Other Resources, where UNDP shall recover costs for the provision of project related general management services (GMS) and direct project services (DPS). In GEF funded projects, GMS costs are incurred by UNDP in undertaking its Project Cycle Management Services as a GEF IA and are not included in the project budget as they are covered by GEF fees and provided to the UNDP Country Office through UNDP internal distribution. DPS costs are those incurred by UNDP for the provision of services requested by a host Government and that are execution driven and can be traced in full to the delivery of project inputs. They relate to operational and administrative support activities carried out by UNDP offices on behalf of the Direct Implementation Modality (DIM) or Country Office support to National Implementation Modality (NIM) and include the provision of the following estimated services:

- Payments, disbursements and other financial transactions.
- Recruitment of staff, project personnel, and consultants.
- Procurement of services and equipment, including disposal.
- Organization of training activities, conferences, and workshops, including fellowships.
- Travel authorization, visa requests, ticketing, and travel arrangements.
- Shipment, custom clearance, vehicle registration, and accreditation.

190. These execution-related costs are separate and distinct from the GMS costs. In accordance with UNDP policy on cost recovery (2010) and the BOM and UNDP GEF guidance on Direct Project Costs (2012) the costs incurred by UNDP for the provision of direct project services needs to be recovered on the basis of estimated actual costs expected to be incurred or on a per-transaction basis using the Universal price list or Local Price List costing template and should be charged directly to project budgets. The estimated costs are included in the project budget and are funded within the total project management Costs (PMC) allocation provided by GEF to the implementation Parties and cannot exceed the total PMC allocation. Once incurred after each of the above services is provided by UNDP, costs shall be charged against budget code line 74598.

191. These costs are summarized in the following table:

SUMMARY OF SUPPORT SERVICES TO BE PROVIDED BY UNDP			
Support services	Schedule for the provision of the support services	Cost to UNDP of providing such support services	Amount and method of reimbursement of UNDP
1. Individual consultant contracts	During project implementation	Staff cost Position Costs	Support services
2. Companies contracts	During project implementation	Staff Position Costs	Support services
3. Financial assistance	During project implementation	Staff Position Costs	Support services
4. Procurement of goods and services	During project implementation	Staff Position Costs	Support services
TOTAL:		Up to USD 25,000 from GEF grant	

Specific situations

192. **Budget Revision and Tolerance:** As per UNDP requirements outlined in the UNDP POPP, the PB will agree on a budget tolerance level for each plan under the overall AWP allowing the PM to expend up to the tolerance level beyond the approved Project budget amount for the year without requiring a revision from the Project Board. Should the following deviations occur, the PM and UNDP CO will seek the approval of the UNDP-GEF team to ensure accurate reporting to the GEF: (a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more; (b) Introduction of new budget items/or components that exceed 5% of original GEF allocation. Any over-expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).
193. **Refund to GEF:** Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the UNDP-GEF Unit in New York.

Project closure

194. **Project Closure:** Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP.⁶⁹ On an exceptional basis only, a no-cost extension beyond the initial duration of the Project will be sought from UNDP CO and then the UNDP-GEF Executive Coordinator.
195. **Operational completion:** The Project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the TE report (that will be available in English) and the corresponding management response, and the End-of-Project review PB meeting. The IP, through a PB decision, will notify UNDP CO when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.
196. **Transfer or disposal of assets:** In consultation with the NIM IP and other Project parties, the UNDP programme manager (UNDP Resident Representative) is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the PB

⁶⁹ see <https://info.undp.org/global/popp/ppm/Pages/Closing-a-Project.aspx>

following UNDP rules and regulations. In all cases of transfer, a transfer document must be prepared and kept on file⁷⁰.

197. Financial completion: The Project will be financially closed when the following conditions have been met: a) The Project is operationally completed or has been cancelled; b) The IP has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the Project; d) UNDP and the IP have certified a final Combined Delivery Report (which serves as final budget revision).
198. The Project will be financially completed within 12 months of operational closure or after the date of cancellation. Between operational and financial closure, the IP will identify and settle all financial obligations and prepare a final expenditure report. The UNDP CO will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-GEF Unit for confirmation, before the Project will be financially closed in Atlas by the UNDP Country Office.

⁷⁰ See

https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PPM_Project%20Management_Closing.docx&action=default.

X. TOTAL BUDGET AND WORK PLAN

Award / Project ID:		00110555 / 00109749												
Business Unit:		GUY10												
Project Title:														
Mainstreaming Low-emission Energy Technologies to Build Guyana's Green Economy – UNDP/GEF MSP Project (PIMS 5831)														
Implementing Partner/Executing Agency:														
Ministry of the Presidency, Office of Climate Change (OCC)														
GEF Component/Atlas Activity	Responsible Party (Implementing Agent)	Fund ID	Donor Name											
Atlas Budgetary Account Code														
ATLAS Budget Description														
Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:									
1. Sustainable business and financing models for low-carbon energy technologies.	OCC	62000	GEF	71200 International Consultants	23,000	35,000	30,000	15,000	103,000	1				
				71300 Local Consultants	0	0	25,000	0	25,000	2				
				71600 Travel	7,000	10,000	10,000	3,000	30,000	3				
				72100 Contractual Services – Companies	60,000	90,000	90,000	60,000	300,000	4				
				74200 Audio Visual & Print Prod Cost	1,000	2,000	1,000	0	4,000	5				
				74500 Miscellaneous Expenses	1,000	1,000	1,000	0	3,000	6				
				sub-total	92,000	138,000	157,000	78,000	465,000					
				2. Policy framework and institutional capacities.				71200 International Consultants	16,000	20,000	0	0	36,000	7
								71300 Local Consultants	3,000	5,000	5,000	2,000	15,000	8
								71600 Travel	3,000	4,000	3,000	3,000	13,000	9
72100 Contractual Services – Companies	32,000	90,000	80,000					30,000	232,000	10				
74200 Audio Visual & Print Prod Cost	2,000	2,000	2,000					1,000	7,000	11				
74500 Miscellaneous Expenses	1,000	1,000	0					0	2,000	12				
sub-total	57,000	122,000	90,000					36,000	305,000					
3. Deployment of low-emission energy technologies.								71200 International Consultants	45,000	25,000	30,000	20,000	120,000	13
								71300 Local Consultants	35,000	35,000	30,000	0	100,000	14
								71600 Travel	9,000	8,000	8,000	5,000	30,000	15
				72100 Contractual Services – Companies	17,172	60,000	60,000	50,000	187,172	16				
				72200 Equipment and Furniture	0	100,000	100,000	75,000	275,000	17				
				74500 Miscellaneous Expenses	1,000	2,000	1,000	1,000	5,000	18				
sub-total	107,172	230,000	229,000	151,000	717,172									

4. Monitoring and Evaluation													
						71200	International Consultants	39,000	10,000	0	20,000	69,000	19
						71300	Local Consultants	0	5,000	0	5,000	10,000	20
						71600	Travel	5,000	3,000	0	3,000	11,000	21
						74100	Professional Services – Audits	0	5,000	5,000	5,000	15,000	22
							sub-total	44,000	23,000	5,000	33,000	105,000	
Project Management						71300	Local Consultants	22,000	37,000	37,000	30,000	126,000	23
						71600	Travel	1,000	1,000	1,000	1,000	4,000	24
						72200	Equipment and Furniture	2,000	0	0	0	2,000	25
						74500	Miscellaneous Expenses	1,000	0	0	0	1,000	26
						74596	Direct Project Costs	7,000	6,000	6,000	6,000	25,000	27
							sub-total	33,000	44,000	44,000	37,000	158,000	
							TOTAL	333,172	557,000	525,000	335,000	1,750,172	

Summary of Funds: 71

	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total
GEF	333,172	557,000	525,000	335,000	1,750,172
parallel co-financing	535,000	1,336,000	2,337,430	2,216,000	6,424,430
TOTAL	868,172	1,893,000	2,862,430	2,551,000	8,174,602

Budget note Comments (stated budgets are in US\$)

OUTCOME 1 (US\$ 465,000)

1	(1.1.1.; 63k\$) One international RE/EE expert (consultant) at P3-level to act as the Technical Advisor for the Project with responsibilities including: (i) support to the Executive (OCC) and PM on project issues and strategic planning; (ii) quality assurance of project activities, including preparation of Terms of Reference for consultancies and procurement, and overall supervision of contracted activities; (iii) technical backstopping for project teams and work groups; (iv) engagement with key authorities on low-emission energy development
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⁷¹ Summary table should include all financing of all kinds: GEF financing, co-financing, cash, in-kind, etc...

	and regulation; and (v) promotion of inter-institutional coordination to support deployment of low-emission energy technologies in Guyana; (1.1.3; 30k\$) One international expert in the field of business organization; (1.1.4; 10k\$) One international RE/EE expert (TA Advisor) for drafting of TOR and supervision of requested services (see above).
2	(1.1.2; 25k\$) Short-term contracts with (i) one national expert for drafting manuals and guidelines; and (ii) one legal expert in public procurement and electricity market regulation for drafting PPA and DG model contracts.
3	(30k\$) Mission costs (international travel and DSA) for international consultants. Costs of domestic travel (air tickets, land travel, fuel, DSA).
4	(1.1.1; 150k\$) One or two international or national consultancy firms or institutions to elaborate: (i) transmission grid assessment for IPP; (ii) distribution grid assessment for DG; (iii) assessment of relevant business and management models of electricity grids, including recommendations; (1.1.3; 80k\$) One contract with national specialized consultancy firms or institution to collate RE/EE best practices adapted to the Guyanese context; One contract with specialized national firm or institution for training and certification of RE/EE professionals; (1.1.4; 70k\$) One or more contracts with national or international specialized consultancy firms to collect baseline information and design the requested models for decentralized grids under relevant scenarios.
5	(1.1.2; 4k\$) Preparation and reproduction of manuals, guidelines, concepts, model contracts for sharing and consultation by electronic and paper media.
6	(3k\$) Miscellaneous expenses
OUTCOME 2 (US\$ 305,000)	
7	(2.1.1; 26k\$) one Project Technical Advisor (international consultant) to provide technical advice and facilitate the dialogue process; (2.1.3; 10k\$) one Project Technical Advisor (international consultant) for purview of the Green Procurement process.
8	(2.1.2; 15k\$) One national expert in climate funding for technical advice and supervision of requested services in coordination with OCC.
9	(13k\$) Mission costs (international travel and DSA) for international consultants. Costs of domestic travel (air tickets, land travel, fuel, DSA).
10	(2.1.1; 80k\$) One contract with specialized firms or individuals to provide inputs and advice on sector governance; (2.1.2; 55k\$) One or more contracts with national or international specialized consultancy firms or institutions for adaptation of project finance methodologies to the Guyanese context; (2.1.3; 75k\$) One contract with specialized firm or institutions for specification of EE/RE criteria, amendment of applicable processes and updating of manuals and guidelines in use by public entities; (2.1.4; 22k\$) One or more service contracts with national companies or institutions for hosting and organization of events including workshops, seminars and site visits.
11	(2.1.1; 2k\$) Preparation and reproduction of reports and proposals for consultation; (2.1.4; 5k\$) Production of material for events and publication of reports and articles.

12	(2k\$) Miscellaneous expenses
OUTCOME 3 (US\$ 717,172)	
13	(3.1.1.; 120k\$) One Project Technical Advisor (international consultant) for drafting of TOR and to act as team leader for RE/EE project pipeline development; one international RE expert for technical backstopping and review of functional specifications and prefeasibility studies.
14	(3.1.1.; 100k\$) Two national consultants (Support Experts) for development of RE/EE projects under leadership of the TA, including supervision of requested services and engagement with local stakeholders;
15	(30k\$) Mission costs (international travel and DSA) for international consultants. Costs of domestic travel (air tickets, land travel, fuel, DSA).
16	(3.1.1.; 102,172\$) One or more contracts with national or international specialized consultancy firms to carry out pre-feasibility and technical studies for selected pilots; one contract with specialized firm for legal counselling and negotiations for PPA signature and securing of needed permits (if required);
17	(3.1.3.; 85k\$) One contract with specialized firm or institution for design of a monitoring and data exchange protocol; one contract with national institution for training of public energy building operators on data collection and sharing; one contract with national firm or institution for installation costs of data measurement equipment for small-scale projects, including operating costs of data system.
18	(3.1.2.; 275k\$) One or more contracts with national or international suppliers of RE/EE systems for delivery of equipment for selected pilot projects; one contract with specialized firm or institution for implementation of ISO 50001 energy management system for a public building, market or service.
18	(5k\$) Miscellaneous expenses
OUTCOME 4 (US\$ 105,000)	
19	(4.1.1.; 39k\$) One international M&E specialist to support UNDP and OCC during the Project's inception phase and engage with key Government partners to establish the High-level Committee, detail the Project's M&E Plan and provide recommendations for the annual work plan (AWP) and procurement plan for the first Project Year;
20	(4.1.2.; 30k\$) One independent international expert to lead TE team and conduct evaluation, including reporting.
20	(4.1.1.; 5k\$) One national M&E specialist for backstopping of monitoring process and provide recommendation on gender aspects;
21	(4.1.2.; 5k\$) One national consultant to participate in TE evaluation team and provide logistical support.
21	(11k\$) Mission costs (international travel and DSA) for international consultants. Costs of domestic travel (air tickets, land travel, fuel, DSA).
22	(4.1.3.; 15k\$) One or more service contracts for annual project audits as per indicated in the UNDP financial rules and regulations.
PROJECT MANAGEMENT (US\$ 158,000)	
23	(126k\$) One Project Coordinator (national consultant, full-time); one Project Assistant (national consultant, part-time 50%). See Terms of Reference.
24	(4k\$) Costs of domestic travel (air tickets, land travel, fuel, DSA) for visiting project sites and regular monitoring of contracted project

	activities.
25	(2k\$) Two laptops, printer and digital camera.
26	(1k\$) Miscellaneous expenses
27	(25k\$) Direct project costs for UNDP project services as defined in the Letter of Agreement (LOA), Annex J

XI. LEGAL CONTEXT

199. This Project Document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement (SBAA) between the Government of Guyana and UNDP, signed on May 3, 1977. All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.” The project “Mainstreaming Low-emission Energy Technologies to build Guyana’s Green Economy” will be implemented by the Office of Climate Change (OCC) (“Implementing Partner”) in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.
200. Any designations on maps or other references employed in this Project Document and its annexes do not imply the expression of any opinion whatsoever on the part of UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

XII. RISK MANAGEMENT

201. Consistent with the Article III of the SBAA, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP’s property in the Implementing Partner’s custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:
- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
 - b) assume all risks and liabilities related to the Implementing Partner’s security, and the full implementation of the security plan.
202. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner’s obligations under this Project Document.
203. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.
204. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).
205. The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.
206. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.
207. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

208. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.
209. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.
210. Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.
211. UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement.
212. Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.
213. Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.
214. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.
215. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

XIII. ANNEXES