GUYANA

First Biennial Transparency Report

to the United Nations Framework Convention on Climate Change

August 2024

Annex to the BTR

Information necessary to track progress made in implementing and achieving its nationally determined contribution under Article 4 of the Paris Agreement

Acronyms and Abbreviations

AD	Activity Data
AFOLU	Agriculture, Forestry, and Other Land Use
ART-TREES	Architecture for REDD+ Transactions the Environmental Excellence Standard
BTR	Biennial Transparency Report
CTF	Common Tabular Format
DECC	Department of Environment and Climate Change
EMGL	ExxonMobil Guyana Limited's
EPA	Environmental Protection Agency
ERP	Emission Reduction Programme
ETF	Enhanced Transparency Framework
EU FLEGT	EU Forest Law Enforcement Governance and Trade
FREL	Forest Reference Emissions Level
GDP	Gross Domestic Product
GEA	Guyana Energy Agency
GFC	Guyana Forestry Commission
GHG	Greenhouse Gas
HFLD	High Forest Cover Low Deforestation Rate
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ITMO	Internationally Transferred Mitigation Outcomes
LCDS	Low Carbon Development Strategy
LED	Light-Emitting Diode
LULUCF	Land Use, Land-Use Change and Forestry
MITICA	Mitigation-Inventory Tool for Integrated Climate Action
MPGs	Modalities, Procedures, and Guidelines
MRV	Monitoring, Reporting, and Verification
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organisation
OLADE	Latin-American Energy Organization
PAM	Policy and Measure
PV	Photovoltaic
REDD+	Reducing Emissions from Deforestation and Degradation
RES	Renewable Sources

RIL	Reduced Impact Logging
SIDS	Small Island Developing State
UNFCCC	United Nations Framework Convention on Climate Change
VPA	Voluntary Partnership Agreement
WAM	With Additional Measures
WM	With Measures
WOM	Without Measure

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1. National circumstances and institutional arrangements

Chapter 1 of the Biennial Transparency Report (BTR) provides a comprehensive overview of Guyana's government structure, population demographics, geographical landscape, economic profile, climate conditions, and hydrological and natural resources. Furthermore, details on how the national circumstances affect greenhouse gas (GHG) emissions and removals over time are presented in Chapter 2 of the BTR.

Chapter 4 of the BTR describes the institutional arrangements that Guyana has established to manage and coordinate its climate change activities. This chapter highlights the mechanisms in place to ensure effective communication and information flow among various stakeholders, including government agencies, the private sector, non-governmental organisations (NGOs), and international institutions. It also outlines the legal, institutional, administrative, and procedural frameworks that support the domestic implementation, monitoring, reporting, and archiving processes, as well as stakeholder engagement crucial for the successful implementation and achievement of Guyana's nationally determined contribution (NDC).

In alignment with these institutional frameworks, the Department of Environment and Climate Change (DECC) plays a central role in coordinating the tracking of progress toward implementing and achieving the NDC. The DECC is tasked with collecting the necessary data based on the specified requirements and sources for various indicators. This data is essential for monitoring progress and is ultimately reported to the United Nations Framework Convention on Climate Change (UNFCCC) to fulfil the international transparency and accountability obligations under the enhanced transparency framework (ETF) of the Paris Agreement.

2. Description of Guyana's NDC

As a developing country, a coastal low-lying small island developing state (SIDS), and one of the few net carbon sink countries, Guyana submitted its NDC to the UNFCCC in 2016[1]. The overarching goal is to transition the national economy towards improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities. This vision includes the pursuit of a resilient, low-carbon, socially inclusive economy that enhances quality of life for all, within the planet's ecological limits.

Guyana's NDC, along with the Low Carbon Development Strategy (LCDS) 2030, forms the core of Guyana's climate change mitigation policy, outlining the vision and plan for achieving a low-emission economic development pathway. It establishes the country´s international conditional and unconditional commitments to 2025 under the forestry and energy sectors, where the majority of the nation´s current and historic emissions are produced. Table 1 provides an overview of the scope, coverage, and approach of Guyana's NDC.

Table 1. Overview of the NDC of Guyana.

	Description
Target(s) and description, including target type(s), as applicable	In the energy sector: • Expansion of a renewable energy supply of wind, solar, biomass and hydropower. • Reduction of energy consumption and increase of energy efficiency. In the forestry sector: • Continuation and improvement of sustainable forest management. These targets are policy-based including measures to reduce the normative "business-as-usual" growth in emissions.
Target year(s) or period(s), and whether they are single-year or multi-year target(s), as applicable	Single year target in 2025

[1] Guyana First NDC. Available at: https://unfccc.int/sites/default/files/NDC/2022-06/Guyana%27s%20revised%20NDC%20-%20Final.pdf

	Description
Reference point(s), level(s), baseline(s), base year(s) or starting point(s), and their respective value(s), as applicable	2016
Time frame(s) and/or periods for implementation, as applicable	2016-2025
Scope and coverage, including, as relevant, sectors, categories, activities, sources and sinks, pools and gases, as applicable	Scope: National level Coverage: Forestry and energy sectors Gases: Carbon dioxide (CO_2)
Intention to use cooperative approaches that involve the use of ITMOs under Article 6 towards NDCs under Article 4 of the Paris Agreement, as applicable	Guyana intends on pursing engagement in the voluntary and compliance markets guided and in compliance with Articles 4 and 9 of the Paris Agreement. In so doing, Guyana will pursue cooperative approaches that involve the use of internationally transferred mitigation outcomes (ITMOs). Guyana's robust monitoring, reporting, and verification (MRV) system can ensure the integrity of the emission reduction efforts while engaging with carbon-neutral markets to maximise the value of exports and providing internationally attractive, verifiable low carbon products.
Any updates or clarifications of previously reported information, as applicable	Not applicable

Under the forestry sector, Guyana seeks to utilise a combination of conservation and sustainable forest management practices and enhanced governance to combat climate change, including efforts from the timber and mining industries as well as its national protected area system. Under the energy sector, Guyana seeks to reduce the country´s dependence on fossil fuels and fortify energy efficiency. Table 2 outlines more specific NDC objectives per sector, with Guyana actively working towards meeting these commitments.

Table 2. Overview of NDC commitments within the forestry and energy sectors.

Type	Forestry Sector	Energy Sector
Unconditional	• Enhance sustainable forest management encompassing: – Compliance and monitoring the legality of the timber industry. – Improved added-value activities locally to assist in creating a higher potential for carbon storage in long-use wood products. – Strengthened support for indigenous communities as they continue the stewardship of their lands and accrue benefits from REDD+ activities.	• Expand the coverage and penetration of the renewable energy power supply through a mix of wind, solar, biomass and hydropower. • Reduce energy consumption and increase energy efficiency through standards, incentives, and education programmes.
Conditional	• Empower the Emission Reduction Programme for Forests by: – Fortifying the ongoing improvement and implementation of Guyana's MRVS. – Building institutional and private sector capacity to comply with international timber trade and supply conditions and implement reduced impact logging. – Implementing policy reforms, education, technologies, and incentives for integrated sustainable planning and management of the mining industry. – Expanding the National Protected Area System to conserve an additional 2 million hectares.	• Rapid move towards renewable power supply by 2025.

The following sections provide further information on the conditional and unconditional commitments within the sectors covered by the NDC of Guyana. Additionally, Annex I of this document contains the complementary common tabular format (CTF) tables 2 and 3, which provide essential definitions for understanding the NDC, as well as the methodologies and accounting approaches used.

2.1. Forestry Sector

In addressing climate change within the forestry sector, Guyana is employing a combination of conservation and sustainable forest management strategies. Guyana is committed to safeguarding its forests, recognising their vital role in mitigating climate change by absorbing substantial amounts of carbon dioxide (CO_2). It acknowledges that when forests are destroyed or damaged, they can become a source of GHG emissions.

Guyana has established a state-of-the art MRV system enabling the access to international carbon markets pay-for-results mechanisms, helping to propel Reducing Emissions from Deforestation and Degradation (REDD+) activities set out under the LCDS 2030, including the empowerment of indigenous communities to participate in and benefit from such actions, in addition to fortified frameworks ensuring the legality of the timber industry.

Guyana's NDC – and the supporting Forest Reference Emissions Level (FREL), which is part of the UNFCCC's REDD+ architecture – set out the combination of domestic and international actions required to achieve the overall global goals of REDD+ in Guyana.

Unconditional contributions:

- Ensure compliance with the various Codes of Practice to realise sustainable forest management (SFM).
- Maintenance of a high level of timber legality, including the finalisation and implementation of the Voluntary Partnership Agreement (VPA) under the EU Forest Law Enforcement Governance and Trade (EU FLEGT).
- Improve added-value activities locally to assist in creating a higher potential for carbon storage in long-term wood products.
- Strengthened support for indigenous communities as they continue the stewardship of their lands and accrue benefits from REDD+ activities.

Conditional contributions:

- Empower the Emission Reduction Programme (ERP) for forests by:
    - Expanding the National Protected Area System to conserve an additional 2 million hectares.
    - Use of Reduced Impact Logging (RIL) with the potential to reduce annual emissions by 13.5%, translating to a reduction of about 430,000 tCO_2 per year.
    - Building institutional and private sector capacity to comply with international timber trade and supply conditions and implement reduced impact logging.
    - Implementing policy reforms, education, technologies, and incentives for integrated sustainable planning and management of the mining industry.

- Completion and maintenance of building the national MRV system.

2.2. Energy Sector

The energy sector is the largest emitter and is at the forefront of national priorities to reduce overall GHG emissions. Consequently, the transition towards a clean energy matrix from the current fossil-dependent matrix is one of the key priorities of Guyana. The country has implemented various solar photovoltaic (PV) and hydroelectric actions to increase the coverage and penetration of renewable energy sources across the country. Furthermore, the country has developed several actions to increase energy efficiency and create a sustainable energy system for Guyana.

Unconditional contributions:

- Expand the coverage and penetration of the renewable energy power supply through a mix of wind, solar, biomass and hydropower to supply both the demand of the national grid and the energy requirements for towns and villages in Guyana's hinterland.
- Reduce energy consumption and increase energy efficiency through standards, incentives, and education programmes, including building codes and net-metering of residential renewable power.

Conditional contributions:

- Develop a rapid move towards renewable power supply by 2025.

3. Information to track progress made in implementing and achieving Guyana's NDC

In line with the modalities, procedures, and guidelines (MPGs) of the ETF of the Paris Agreement, Guyana has developed specific indicators to monitor progress toward achieving the mitigation targets set out in its NDC. An indicator can be defined as a metric that enables monitoring of performance and tracking of progress towards the achievement of objectives, in order to demonstrate results and inform corrective action.

The MPGs allow countries to choose indicators relevant to their NDCs, whether a small, focused set or a broader range, and these indicators can be qualitative or quantitative. The purpose of these indicators is to track progress toward the goals outlined in Guyana's NDC. Guyana has selected SMART indicators, those that are specific, measurable, ambitious/achievable, relevant, and time-bound, to ensure effective monitoring and assessment.

3.1. Indicators for unconditional NDC targets

Guyana's NDC outlines sector-based unconditional mitigation targets focus on factors influencing national GHG trends, such as energy efficiency, renewable energy, and forest cover. The unconditional mitigation goals in Guyana's NDC are the continuation and improvement of sustainable forest management, increasing the energy supply from renewable sources, reducing the energy consumption from fossil sources and enhancing the energy efficiency.

Table 3, Table 4, Table 5, Table 6, and Table 7 detail the indicators selected to monitor progress in implementing and achieving these unconditional mitigation targets of Guyana's NDC, along with their scope and other relevant characteristics. Additionally, Annex I of this document contains the complementary CTF table 1 which provides a further description of the selected indicators.

Table 3. Indicator for tracking the energy supply from renewable sources.

Sector	Energy	
Name	Energy supply from renewable sources	
Reference year	**Current year**	**Target year**
12,602 TJ (2016)	7,864 TJ (2022)	Greater than 12,602 TJ (2025)

Characteristics	
Overview	
Mitigation Relevance	Renewable energy sources produce less CO_2 compared to fossil fuels, and increasing their proportion in the national energy supply supports climate change mitigation efforts.
Unit of Measure	TJ
Type of Indicator	Quantitative
Data Collection	
Data requirements	• Energy supply from wind (TJ) • Energy supply from solar (TJ) • Energy supply from biomass (TJ) • Energy supply from hydropower (TJ)
Data sources	Guyana Energy Agency (GEA)
Frequency of data collection	Annually
Estimation Methodology	
Formula	$A = B + C + D + E$
Definition of variables	A = Energy supply from renewable sources (TJ) B = Energy supply from wind (TJ) C = Energy supply from solar (TJ) D = Energy supply from biomass (TJ) E = Energy supply from hydropower (TJ)
Methodology & assumptions	This indicator consists in the energy supply recorded in the energy balance for the country provided by OLADE for the energy commodities considered as renewable, namely firewood, sugarcane and charcoal. The amount of RES from solar, wind and hydropower were not available for this edition of the BTR. The units are Terajoules (TJ). The estimation methodology includes the renewable energy sources specified in the NDC, but Guyana does not restrict itself to only these sources.
Monitoring frequency	Annually
Other Information	
Limitations	The indicator only focuses on the total energy supply from renewable sources, and could be refined in the future to also consider the overall growth in energy demand to fully capture the effectiveness of the energy transition.
Observations	The adoption of renewable energy would need to be accompanied by a decrease in the use of conventional fossil fuels in the national energy supply to have a direct linkage to the reduction in GHG emissions.

Table 4. Indicator for tracking the energy consumption from fossil sources.

Sector	Energy	
Name	Energy consumption from fossil sources	
Reference year	**Current year**	**Target year**
44,720 TJ (2016)	48,391 TJ (2022)	Less than 44,720 TJ (2025)
Characteristics		
Overview		
Mitigation Relevance	Energy consumption from fossil sources refers to the total amount of energy that is derived from fossil sources. This indicator measures the quantity of energy consumed that comes from these non-renewable sources. Higher energy consumption from fossil sources generally leads to higher GHG emissions. The indicator is expressed in terajoules (TJ).	
Unit of Measure	TJ	
Type of Indicator	Quantitative	
Data Collection		
Data requirements	• Energy supply from petroleum (TJ) • Energy supply from natural gas (TJ) • Energy supply from other fossil sources (TJ)	
Data sources	Guyana Energy Agency (GEA)	
Frequency of data collection	Annually	
Estimation Methodology		
Formula	$A = B + C + D$	
Definition of variables	A = Energy supply from fossil sources (TJ) B = Energy supply from petroleum (TJ) C = Energy supply from natural gas (TJ) D = Energy supply from other fossil sources (TJ)	
Methodology & assumptions	This indicator consists of the total energy consumption used in the National inventory for estimating the emissions of the energy sector. The data source is the energy balance provided by Latin-American Energy Organization (OLADE).	
Monitoring frequency	Annually	
Other Information		
Limitations	This indicator measures the total energy consumed from fossil sources and should also consider how efficiently that energy is used. In addition, the indicator could be refined to differentiate between the types of fossil fuels used.	

Observations	Guyana has recently initiated oil and natural gas production of the coast of the country.

Table 5. Indicator for tracking the energy consumption from fossil sources per unit of GDP.

Sector	Energy	
Name	Energy consumption from fossil sources per unit of Gross Domestic Product (GDP)	
Reference year	**Current year**	**Target year**
10.06 TJ/Million USD (2016)	3.39 TJ/Million USD (2022)	Under 10.06 TJ/Million USD (2025)
Characteristics		
Overview		
Mitigation Relevance	It measures the amount of energy derived from fossil sources consumed to produce a unit economic output (GDP). This reflects the energy efficiency of an economy in utilising fossil sources. When less fossil sources are used to produce a given amount of economic output this can indicate more efficient use of energy.	
Unit of Measure	TJ/Million USD	
Type of Indicator	Quantitative	
Data Collection		
Data requirements	• Total energy consumption from fossil sources in TJ • GDP in constant prices	
Data sources	• Guyana Energy Agency (GEA) • Guyana Bureau of Statistics	
Frequency of data collection	Annually	
Estimation Methodology		
Formula	$A = \frac{B}{C}$	
Definition of variables	A = Fossil energy intensity B = Total energy consumption from fossil sources (TJ) C = GDP (Million USD)	
Methodology & assumptions	This indicator consists in the total energy consumption used in the National inventory for estimating the emissions of the energy sector, divided by the GDP of the country in millions USD. The data source used for the energy consumption is OLADE, while GDP data has been obtained from the World bank database, as it provides a consistent time series for the NDC implementation period. The metrics of GDP are constant 2015 USD.	
Monitoring frequency	Annually	
Other Information		

Limitations	While adjusting GDP to constant prices helps control for inflation, it may not fully capture all economic fluctuations, which could impact the long-term effectiveness of the indicator.
Observations	A higher fossil energy intensity indicates greater reliance on fossil fuels per unit of economic output, often associated with higher greenhouse gas emissions. Lower fossil energy intensity suggests improved energy efficiency.

Table 6. Indicator for tracking sustainable forest management.

Sector	Forestry	
Name	Percentage of staff dedicated to field monitoring sustainable practices in forest management	
Reference year	**Current year**	**Target year**
50% (2016)	50% (2022)	50% (2025)
Characteristics		
Overview		
Mitigation Relevance	Forests absorb carbon dioxide (CO_2) from the atmosphere, acting as carbon sinks. Ensuring sustainable forest management helps in mitigating climate change by maintaining and enhancing carbon stocks through proper forest monitoring and management.	
Unit of Measure	Percentage (%)	
Type of Indicator	Quantitative	
Data Collection		
Data requirements	• Total number of staff assigned to field monitoring sustainable forest management (#) • Total workforce of the forestry commission (#)	
Data sources	Guyana Forestry Commission (GFC)	
Frequency of data collection	Annually	
Estimation Methodology		
Formula	$A = \frac{B}{C} * 100$	
Definition of variables	A = Staff field monitoring sustainable forest management (%) B = Total number of staff assigned to field monitoring sustainable forest management (#) C = Total workforce of the forestry commission (#)	
Methodology & assumptions	The indicator measures the percentage of forestry staff actively involved in field monitoring activities related to sustainable forest management out of the total relevant workforce. This includes overseeing compliance with national and international standards and	

	agreements, including legal timber extraction, sustainable practices, and carbon storage potential. It assumes that the percentage of staff actively involved in monitoring activities is a reliable proxy for overall forest management effectiveness where an increase in the percentage of staff dedicated to field monitoring directly improves the effectiveness of sustainable forest management practices.
Monitoring frequency	Annually
Other Information	
Limitations	Staff involvement may not directly correlate to outcomes in sustainable forest management practices.
Observations	External factors such as policy changes or resource limitations can affect staff numbers involved in monitoring and thereby the effectiveness of sustainable forest management.

Table 7. Indicator for tracking sustainable forest management.

Sector	Forestry	
Name	Number of staff dedicated to field monitoring sustainable practices in forest management	
Reference year	**Current year**	**Target year**
172 (2016)	194 (2022)	209 (2025)
Characteristics		
Overview		
Mitigation Relevance	Forests absorb carbon dioxide (CO_2) from the atmosphere, acting as carbon sinks. Ensuring sustainable forest management helps in mitigating climate change by maintaining and enhancing carbon stocks through proper forest monitoring and management.	
Unit of Measure	Number (#)	
Type of Indicator	Quantitative	
Data Collection		
Data requirements	Total number of staff assigned to field monitoring sustainable forest management (#)	
Data sources	Guyana Forestry Commission (GFC)	
Frequency of data collection	Annually	
Estimation Methodology		
Formula	Not applicable (direct headcount)	
Definition of variables	Total number of staff assigned to field monitoring sustainable forest management (#)	

Methodology & assumptions	This indicator (number of staff) complements the previous indicator to evaluate the overall dedication of Guyana to monitoring of sustainable practices in forest management. It tracks the number of staff assigned specifically to monitor and enforce sustainable forest management practices, which include compliance with national and international standards and agreements, including legal timber extraction, sustainable practices, and carbon storage potential.
Monitoring frequency	Annually
Other Information	
Limitations	Staff involvement may not directly correlate to outcomes in sustainable forest management practices.
Observations	External factors such as policy changes or resource limitations can affect staff numbers involved in monitoring and thereby the effectiveness of sustainable forest management.

3.2. Indicators for conditional NDC targets

Guyana's NDC also includes sector-based conditional mitigation targets that build upon the unconditional targets, contingent upon receiving international support. These conditional mitigation targets aim to further enhance the share of renewable energy in the national power supply and to expand and preserve forest cover.

Table 8 details the indicator selected to monitor progress in implementing and achieving the unconditional mitigation targets of Guyana's NDC for the forestry sector, along with the scope and other relevant characteristics. Additionally, Annex I of this document contains the complementary CTF table 1 which provides a further description of the selected indicator.

However, since the conditional target of the energy sector align with the areas addressed by the unconditional targets, progress towards achieving this conditional target will be monitored using the same indicator:

- Energy supply from renewable sources

Table 8. Indicator for tracking the forest cover.

Sector	Forestry	
Name	Share of national territory covered by forest	
Reference year	**Current year**	**Target year**
85.82% (2016)	82.98% (2022)	85.82% (2025)
Characteristics		
Overview		
Mitigation Relevance	Forests absorb carbon dioxide (CO_2) from the atmosphere, acting as carbon sinks. By maintaining or increasing the area of forested land, GHG emissions can be reduced, contributing to climate change mitigation efforts.	
Unit of Measure	Percentage (%)	
Type of Indicator	Quantitative	
Data Collection		
Data requirements	• Current forest area: the most recent measurement of the land area covered by forest (ha) • National land area: the total land area of the country, excluding bodies of water (ha). This value will remain consistent unless there are significant changes in national boundaries.	
Data sources	Guyana Forestry Commission (GFC)	
Frequency of data collection	Annually	
Estimation Methodology		
Formula	$A = \frac{B}{C} * 100$	
Definition of variables	A = Share of forest cover (%) B= Area of land covered by forest (ha) C= Total national territory area (ha)	
Methodology & assumptions	In Guyana, forest is defined as "Land exceeding 1 hectare with trees exceeding 5m in height and 30% crown cover but not classified as agriculture, infrastructure or settlements". An area is deemed deforested once the cover falls and remains below the elected crown cover threshold of 30%, which is guided by the GOFC-GOLD, 2010 definition of "the long-term or permanent conversion of land from forest use to other non-forest uses."	
Monitoring frequency	Annually	
Other Information		

Limitations	The indicator does not provide information on the quality or health of the forests, such as tree density, biodiversity, or forest degradation. Guyana currently reports separately in annual MRV reporting on Intact Forest Landscapes and this should be used together with this indicator. Furthermore, while the indicator tracks the share of land covered by forest, it does not directly indicate whether this area is increasing due to reforestation or decreasing due to deforestation. This could be added for more comprehensive coverage.
Observations	Since 2008, Guyana has pursued a set of actions that advance the national forest cover – and as a result, has maintained one of the (and often, the) lowest deforestation rates in the world.

3.3. Assessment of achievement of NDC targets

Guyana is actively pursuing a variety of strategies, actions, and plans to address climate change in both the forestry and energy sectors, at national and regional levels. This section provides an overview of Guyana's diligent efforts to meet its NDC targets in these sectors. Although the NDC does not specify quantifiable targets, Guyana is confident that its extensive initiatives for the continuation and improvement of sustainable forest management, along with increasing the share of renewable energy in the national energy supply, and enhancing energy efficiency while reducing overall energy consumption from fossil sources, have met the objectives outlined in the NDC. For detailed information on the progress made in implementing and achieving these targets, please refer to Annex I of this document containing the complementary CTF Table 4.

Forestry sector

Guyana is renowned for its extensive forest cover and low deforestation rate. Approximately 85% of the country's land area is forested, including a significant portion of the Amazon Rainforest, which spans about 18.39 million hectares. These forests are a critical natural asset, storing an estimated 5.96 gigatonnes of carbon in aboveground biomass, equivalent to 21.8 gigatonnes of CO_2 when including soil carbon. They also provide essential ecosystem services, such as flood regulation, water filtration, erosion control, timber products, and opportunities for ecotourism.

The country is dedicated to preserving its forests due to their vital role in climate change mitigation and their contribution to socioeconomic and environmental well-being. To this end, Guyana has designated 1.1 million hectares as Protected Areas. This includes notable sites such as Kaieteur National Park, Iwokrama International Centre for Rain Forest Conservation and Development, Shell Beach, Kanuku Mountains Protected Areas, Kanashen Community Owned Conservation Area, as well as urban parks like the National Park, Botanical Gardens, Zoological Park, and Joe Viera Park.

Historically, Guyana has experienced some of the lowest deforestation rates globally, ranging from 0.02% to 0.079% over the past two decades. Despite this, deforestation and forest degradation continue, driven primarily by mining, agriculture, road infrastructure projects, forestry, and wildfires. Mining related deforestation is the leading cause, responsible for 85% of deforestation between 2001 and 2012, and 74% between 2013 and 2020.

In response, Guyana is advancing sustainable logging through a robust policy and regulatory framework aligned with international standards. This includes the FLEGT VPA, signed with the European Union in December 2022. Consequently, deforestation associated with logging

activities is minimal among the 120 species currently logged, with 15 being commercially exported.

Additionally, Guyana actively participates in the REDD+ (Reducing Emissions from Deforestation and Forest Degradation) framework and has developed a world-class MRV system. This system supports forest results-based payments, contributing to climate change mitigation efforts. Since 2008, Guyana has undertaken various actions to advance its forestry vision, resulting in consistently low deforestation rates.

Energy sector

Guyana is committed to increasing its share of renewable energy and improving energy efficiency. The country is developing wind and solar farms, small hydropower projects, and promoting energy efficiency across different sectors. Key initiatives include replacing outdated lighting technology with energy-efficient Light-Emitting Diodes (LEDs) in households, businesses, and public buildings.

In Guyana, solar, wind, and hydropower resources complement each other. Solar energy is most abundant during the day, peaking at noon, while wind energy is stronger in the evening and night. Wind energy diminishes during the wet seasons, but hydropower remains consistently available. By harnessing these complementary lower-carbon and renewable energy sources, Guyana aims to lower electricity prices and achieve significant greenhouse gas emissions reductions.

Guyana has substantially increased its share of renewable energy sources to meet both national grid demands and energy needs in hinterland towns and villages. The Government also collaborates with farmers to promote the use of bio-digesters, which reduce waste, produce biogas, and offer affordable, efficient cooking solutions. Legislation has been enacted to remove import duties and taxes on renewable energy equipment, compact fluorescent lamps, and LED lamps, incentivising energy-efficient behaviour. Additionally, energy audits continue, and inefficient lighting in public, residential, and commercial buildings is being replaced. The Government has also implemented policies to promote energy efficiency and renewable energy use, including updated building codes and net-metering for residential renewable power.

4. Mitigation policies and measures related to implementing and achieving the NDC

Over the past decade, Guyana has been actively engaging in a variety of strategies, actions and plans to address climate change, both on a nationwide scale and in particular regions of the country. As previously stated, these actions are primarily aligned with the goals and objectives outlined in the country's two main national climate change policies, Guyana's NDC and Guyana's LCDS.

The mitigation actions encompass activities within the energy sector, as well as the forestry sector, including some cross-cutting initiatives. This is in line with the sectoral coverage of Guyana's NDC, which solely focuses on the forest, which is a net carbon sink and energy sectors as this is where the majority of Guyana's current and historical emissions are produced. For these reasons, Guyana's energy transition and continued sustainable management of the forest as a national and global asset are at the centre of the LCDS 2030 and the country continues to actively participate in REDD+ and the latest developments in market-based mechanisms supported by the Paris Agreement.

Guyana is using Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs) as substitutes for phasing out Chlorofluorocarbons (CFCs), halons, carbon tetrachloride, methyl chloroform, and, ultimately, hydrochlorofluorocarbons (HCFCs) under the Montreal Protocol. Guyana acceded to the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer on August 12, 1993 and subsequently ratified the London Amendment, Copenhagen Amendment and Montreal Amendment on July 23, 1999. This commitment contributes to emission reductions in the Industrial Processes and Product Use (IPPU) sector by utilising HFCs and PFCs as substitutes for ozone-depleting substances.

The agriculture and waste sectors are also sources of GHG emissions and will in time be part of the mitigation agenda of Guyana – however, these sectors are not the major sources of GHG emissions and have therefore not been prioritised.

In the case of agriculture, domestic agriculture is critical to the country´s food security and rural livelihoods and is under threat from the adverse effects of climate change, including floods and droughts. For these reasons, Guyana's focus on agriculture is currently centred on adaptation measures and has not yet prioritised mitigation actions for the sector.

Concerning the waste sector, Guyana is partaking in significant investments to enhance solid waste management collection and disposal technologies, including the inauguration of the Haags Bosch Sanitary Landfill, the rehabilitation of open dumpsites, and the control of illegal and informal waste management techniques, coupled with community-scale composting and

recycling initiatives. Substantial achievement has also been observed in improved sanitation infrastructure. In this sense, priority for the waste sector has been on improved sanitation concentrating on human and environmental health.

The following sections provide a comprehensive overview of the various mitigation actions that have been implemented, are currently ongoing, or are planned for implementation within the energy, forestry sector, and cross-cutting sectors. The GHG emission reductions are provided in metric tons. While the NDC does not outline specific quantifiable targets, these mitigation actions have been instrumental in advancing Guyana's NDC goals by expanding renewable energy sources, increasing energy efficiency, reducing energy consumption, and maintaining and increasing forest cover. The estimated GHG emission reductions for each policy and measure (PAM) have been calculated using data from key national stakeholders and desk reviews.

Annex I of this document contains the complementary CTF table 5 which provides further information on these mitigation PAMs related to implementing and achieving the NDC. Additionally, Annex II to this document outlines the mitigation actions categorised by sector, offering comprehensive information on their status, duration, implementing entity, GHG coverage, as well as their geographic and sectoral scope. Additionally, it includes detailed descriptions and objectives, quantitative goals, steps taken or envisaged to achieve the action, estimated outcomes and GHG emission reductions, methodologies, and assumptions, along with progress indicators actions.

4.1. Energy sector

The energy sector is the largest emitter and is at the forefront of national priorities to reduce overall GHG emissions. Guyana recognises this fact and thus, has planned substantial mitigation actions related to the energy sector. A total of 29 mitigation actions are included in this sector, comprising 18 completed, 9 ongoing, and 2 planned initiatives. Among these, 23 are categorised as projects, while 6 are considered enabling activities.

The transition towards a clean energy matrix from the current fossil-dependent matrix is one of the key priorities in Guyana’s national policies. As a result, mitigation actions in the energy sector are predominantly focused on how energy is generated. Of the 29 mitigation actions, 15 focus on power generation, 4 on energy efficiency, 5 on rural electrification, 1 on transport, and 4 on training and development.

For 3 of the mitigation actions in the energy sector, GHG emission reductions could not be estimated due to insufficient information, and 9 actions do not directly reduce GHG emissions.

Table 9 offers a concise summary of the various mitigation actions within the energy sector, along with their associated mitigation potential. A more detailed description of each action is provided in Annex II.

Table 9. Overview of mitigation actions in the energy sector.

Number of mitigation actions	29	
Total estimated GHG emission reductions	782,947.75 tons CO_2e/yr	
Description	**Status (planned, ongoing, completed)**	**Estimated GHG emission reductions**
Guyana Utility Scale Solar Photovoltaic Program (GUYSOL)	Ongoing	37,500 tons CO_2e/yr
Sustainable Energy Program for Guyana	Ongoing	842 tons CO_2e/yr
Electric Vehicle Supporting Infrastructure	Completed	Not Applicable
Pilot Rice Husk Biogas Power Plant	Completed	101 tons CO_2e/yr
Leguan 0.6MWp Solar PV Farm	Planned	841 tons CO_2e/yr
EcoMicro Guyana	Completed	Not Estimated
Energy Matrix Diversification and Institutional Strengthening of the Department of Energy (EMISDE)	Ongoing	3.67 tons CO_2e/yr
Expanding Bioenergy Opportunities in Guyana	Completed	Not Applicable
Enhancing Guyana's Access to green Climate Fund (GCF) to Transition to Renewable Energy	Completed	Not Applicable
Amaila Falls Hydroelectric Project Preparation Studies	Completed	Not Applicable
Wakenaam 0.75MWp Solar Farm	Ongoing	940 tons CO_2e/yr
Small Hydropower Project for the Cooperative Republic of Guyana	Ongoing	12,344 tons CO_2e/yr
Hinterland Solar PV Farms	Planned	3,046 tons CO_2e/yr
Solar PV Public Buildings Program	Completed	15,518 tons CO_2e/yr
Promotion of Private Solar PV Rooftop Systems	Completed	1,431 tons CO_2e/yr
Transitioning to National Energy Security: Bartica as a Model Green Town	Ongoing	Not Applicable
Promotion of Energy Efficiency Measures in the Manufacturing and Service Sectors	Completed	291 tons CO_2e/yr

Project for the Introduction of Renewable Energy and Improvement of Power System in Guyana	Completed	429.65 tons CO_2e / yr
Sustainable Business Models for Rural Electrification and Energy Access in Guyana	Completed	Not Applicable
Solar Home Systems	Ongoing	5,003.71 tons CO_2e / yr
Solar PV Mini-grids	Ongoing	958.52 tons CO_2e / yr
Power Utility Upgrade Program	Completed	Not Estimated
Sustainable Operation of the Electricity Sector and Improved Quality of Service	Completed	Not Estimated
Power Sector Support Program	Completed	Not Applicable
Strengthening Capacity in Energy Planning and Supervision	Completed	Not Applicable
Mabaruma 0.4MWp Solar PV Farm	Completed	478 tons CO_2e/yr
Gas to Energy Project	Ongoing	703,150 tons CO_2e/yr
Caribbean Renewable Energy Development Programme	Completed	Not Applicable
Moraikobai Micro-grid PV System	Completed	70.20 tons CO_2e/yr

4.2. Forestry sector

In addressing climate change within the forestry sector, Guyana is employing a combination of conservation and sustainable forest management strategies. Guyana is committed to safeguarding its forests, recognising their vital role in mitigating climate change by absorbing substantial amounts of carbon dioxide (CO_2). It acknowledges that when forests are destroyed or damaged, they can become a source of GHG emissions.

In Guyana, historical deforestation has been one of the lowest rates in the world (0.02% to 0.079% per year between 2009 and 2020). Guyana is therefore considered to be a high forest cover low deforestation rate (HFLD) country, with forests covering approximately 85% of the country (18.39 million hectares). The latest revision of the LCDS sets out plans up to 2030 to maintain Guyana's low deforestation and high HFLD score including through the use of economic incentives. These economic incentives are grounded in UNFCCC modalities, including REDD+ and the latest evolution of market-based mechanisms underpinned by the Paris Agreement, in particular its Articles 6.2 and 6,4. Consequently, the country is actively engaged in the REDD+ framework and in the Architecture for REDD+ Transactions Environmental Excellence Standard (ART-TREES) to conserve its forests, aligning with the goals of the Paris Agreement.

Within the forestry sector, a total of 5 mitigation actions are included, comprising 2 completed and 3 ongoing initiatives. Among these, 1 is categorised as a project, while 4 are considered enabling activities.

For one mitigation action, precise GHG emission reductions could not be estimated due to insufficient information, and 2 activities do not directly lead to GHG emission reductions as they are more governance and institutional related actions. However, two specific mitigation actions within the forestry sector provide detailed insights into the associated GHG emission reductions. These initiatives underscore Guyana's commitment to mitigation GHG emissions and combatting climate change through effective and measurable actions in the forestry sector.

Table 10 provides a brief summary of the diverse mitigation actions undertaken in the forestry sector, while a more comprehensive outline of each mitigation action is presented in Annex II.

Table 10. Overview of mitigation actions in the forestry sector.

Number of mitigation actions		5
Total estimated GHG emission reductions		109,317,406 tons CO_2e
Description	**Status (planned, ongoing, completed)**	**Estimated GHG emission reductions**
Institutional Strengthening for the Implementation of the LCDS 2030 under REDD+ Partnerships	Completed	Not Applicable
Guyana-EU Forest Law Enforcement, Governance and Trade Voluntary Partnership Agreement	Ongoing	Not Estimated
Guyana REDD+ Monitoring Reporting & Verification System (MRVS)	Ongoing	108.47 million tons CO_2e[2]
Forest Carbon Partnership Facility Project in Guyana	Completed	Not Applicable
Securing a Living Amazon through Landscape Connectivity in Southern Guyana	Ongoing	847,406 tons CO_2e[3]

[2] The implementation of the Guyana REDD+ Monitoring Reporting & Verification System (MRVS) is anticipated to result in a substantial avoidance of 108.47 million tons CO2e over the period from 2016 to 2030 (Architecture for REDD+ Transactions, 2022). Guyana has been issued 33.47 million ART-TREES credits for the period 2016-2020, with an estimated additional 75 million credits to be issued for the period 2021-2030. Each credit being equivalent to 1 ton CO_2e, the total reduction over the 2016-2030 period is estimated at 108.47 million tons CO_2e.

[3] The 'Securing a Living Amazon through Landscape Connectivity in Southern Guyana Project' is poised to contribute significantly, mitigating a cumulative 847,406 tons CO2eup to 2030 (GEF, 2022), as reported in the GEF FSP CEO endorsement document for the approved project "Securing a Living Amazon through Landscape Connectivity in Southern Guyana".

4.3. Cross-cutting sector

In total, there are 6 cross-cutting mitigation actions, with 3 successfully completed and 3 currently in progress. Among these initiatives, 5 are classified as projects, and 1 is identified as enabling activity. The primary focus of these cross-cutting actions is on hinterland development and economic advancement, with 3 mitigation actions categorised by focus area.

Importantly, none of these cross-cutting mitigation actions have undergone estimation of their GHG emission reduction potential. This is either due to a current lack of information or because the nature of the action does not directly lead to GHG emission reductions.

Table 11 provides a brief overview of the diverse mitigation actions in the cross-cutting sector. Annex II presents more comprehensive information for each of the actions.

Table 11. Overview of mitigation actions in the cross-cutting sector.

Number of mitigation actions		6
Total estimated GHG emission reductions		Not Estimated
Description	**Status (planned, ongoing, completed)**	**Estimated GHG emission reductions**
Amerindian Development Fund	Completed	Not Estimated
Support for Micro and Small Enterprise and Vulnerable Groups' Low-Carbon Livelihoods	Completed	Not Estimated
Amerindian Land Titling	Ongoing	Not Estimated
ICT Access and E-services for Hinterland, Remote, and Poor Communities	Ongoing	Not Estimated
Village Sustainability Plans	Ongoing	Not Estimated
Strengthened Monitoring, Enforcement and Uptake of Environmental Regulations in Guyana's Gold Mining Sector	Completed	Not Estimated

5. Summary of GHG emissions and removals

Guyana has included its national inventory report within its BTR rather than as a stand-alone document. It is detailed in Chapter 2 of the BTR. Consequently, following the MPGs, Guyana is not required to provide a separate summary of its GHG emissions and removals.

As a result, Guyana has also not completed the complementary CTF Table 6, which summarises GHG emissions and removals in line with the common reporting table on emission trends.

6. Projections of GHG emissions and removals

In line with international best practices, Guyana has developed and reports 'with measures' (WM) projections of all GHG emissions and removals across the five Intergovernmental Panel on Climate Change (IPCC) sectors, namely energy, Industrial Processes and Product Use (IPPU), Agriculture, Land Use, Land-Use Change and Forestry (LULUCF), and waste.

Further details regarding the assumptions on the PAMs considered in the WM scenario are provided in subsequent sections. The WM projections provide an in-depth estimate of the impact of mitigation PAMs on future GHG emissions and removals in Guyana.

The projections will commence from the most recent year of Guyana's national GHG inventory, 2022, and extend up to 2035. This is in line with the current NDC updating process of Guyana, with the country currently revising and updating its NDC, which will cover the period from 2021 to 2030, and will prepare the subsequent NDC with a timeframe up to 2035.

The following sections provide narrative information on the developed WM projections. Annex I of this document includes the complementary CTF Table 7, which offers further details on projections of GHG emissions and removals under the WM scenario, along with CTF Tables 10 and 11, which outline the projections of key indicators and the underlying assumptions and parameters used for projections. Since Guyana has not developed 'with additional measures' (WAM) or 'without measure' (WOM) projections, the complementary CTF Tables 8 and 9 are not reported.

6.1. Tools and assumptions used for projections of GHG emissions and removals

The models and approaches used for projecting GHG emissions and removals are presented in this section, detailing any key underlying assumptions and parameters used for projections regarding key economic and sectoral indicators.

6.1.1. Methodological framework and tool

Guyana has applied the Mitigation-Inventory Tool for Integrated Climate Action (MITICA)[4] to develop its national projections of GHG emissions and removals. MITICA provides a standardised framework to formulate specific bottom-up mitigation scenarios at the Intergovernmental Panel on Climate Change (IPCC) category level, linked to Guyana's national GHG inventory, and combined with a top-down specification of the national economy. As such, MITICA serves both as a framework and a tool to create consistent mitigation scenarios that can be tracked against historical GHG emission trends.

MITICA utilises the national GHG inventory at the highest disaggregation level and employs a consistent modelling framework for all IPCC sectors to minimise inconsistencies, while still being emission source and country specific. The modelling approach therefore considers the evolution of proxies, including macroeconomic, demographic, and sectoral drivers across various scopes, which influence the methodologies of the country-level GHG inventory.

Generally, MITICA develops mitigation scenarios based on the historical GHG dynamics of each emission source and sink, using a projected macroeconomic framework as a reference, together sectoral indicators that are also considered key determinants of GHG emissions. The macroeconomic framework is built from the evolution of the main socioeconomic and demographic variables, considering that the technology mix, consumer behaviour, and GHG accounting methodologies remain the same as in the latest historical year, changing only due to the implementation of PAMs.

6.1.2. Macroeconomic framework

The forecasting modelling approach applies a nationally-defined macroeconomic framework considering the evolution of several proxies, including the GDP, and population (Table 12).

As previously stated, these proxies influence the future GHG emissions profile of Guyana and are used in conjunction with the national GHG emission inventory to develop projections of GHG emissions and removals. In essence, activity levels of emission sources and sinks are linked to certain anthropogenic drivers that influence the evolution of the emissions/removals, such as, among others, the aggregated GDP and the number of inhabitants of the country. However, it is important to note that not all economic and sectoral proxies have an impact on GHG projections at the category level. The following list of macroeconomic and sectoral proxies is considered as an input to the category-specific models customised within MITICA;

[4] Martín-Ortega, J.L., Chornet, J., Sebos I., Akkermans, S., Lopez Blanco, M.J. (2024). Enhancing Transparency of Climate Efforts: MITICA's Integrated Approach to Greenhouse Gas Mitigation. Sustainability 2024, 16(10), 4219. https://doi.org/10.3390/su16104219

the final model design depends on the statistic characteristics of the historical dataset and the empirical explanatory capacity of the indicator for determining the given category emissions or sinks.

Table 12. Macroeconomic proxies considered for GHG projections.

Proxy	Theoretical relationship
Gross Domestic Product (GDP) w/o oil and gas	Increasing GDP generally involves increasing emissions. The oil and gas sector is showing an uneven dynamic compared to most economic activities of the country. For this reason, the contribution of this sector to GDP is not considered in this proxy, to isolate the effect of the expansion of oil and gas from the other economic activities in the country.
Gross Domestic Product (GDP) total	This proxy considers the aggregated GDP including all economic sectors. Despite oil and gas expansion will indirectly involve an economic growth in other sectors of the economy, the growth of the latter will be slighter. This will have an impact in most emitting categories of the country.
Population	Increased population levels generally lead to increasing emissions.

Gross Domestic Product (GDP)

GDP is a crucial and widely used indicator of economic activity across all sectors of a country, providing a comprehensive measure of overall economic performance. In the context of GHG emissions, changes in GDP often lead to changes in activity data, and therefore they strongly correlate with changes in emissions. Increased economic activity typically leads to higher energy demand, greater industrial output, and elevated consumption patterns, all of which can result in higher GHG emissions. This relationship exists because robust economic activity generally requires more energy and resources, leading to greater emissions.

Therefore, GDP dynamics are key in forecasting future GHG emissions at both sectoral and national levels. Overall economic activity significantly influences emissions, as many sectors are directly affected by the level of economic growth.

This can also be observed in Guyana, which relies heavily on petroleum imports, with a significant increase in these imports contributing substantially to the country's GDP. Diesel,

fuel oil, and gasoline are the principal imports, primarily used by the transportation and electricity sectors. This dependence on petroleum imports is reflected in the GHG emissions from energy industries, which have shown a consistent upward trend from 1990 to 2022. Additionally, the recent expansion of Guyana's oil and gas sector has spurred remarkable economic growth and a notable rise in GHG emissions associated with oil and natural gas systems.

The GDP of Guyana shows two clear behaviours: an upward trend since 2021 in those economic activities related to oil and gas production, and slightly increasing trend for the remaining economic activity of the country. This trend, which is clearly observed in national GDP aggregates, is also expected to continue in the future, as suggested by several sources (International Monetary Fund (IMF), 2023); (The World Bank, n.d.).

This duality has been translated into the macroeconomic framework for the GHG projections, in the form of two GDP proxies, one with oil and gas, and one without oil and gas. Figure 1 illustrate the trends for these two variables, from 2006 to 2035.

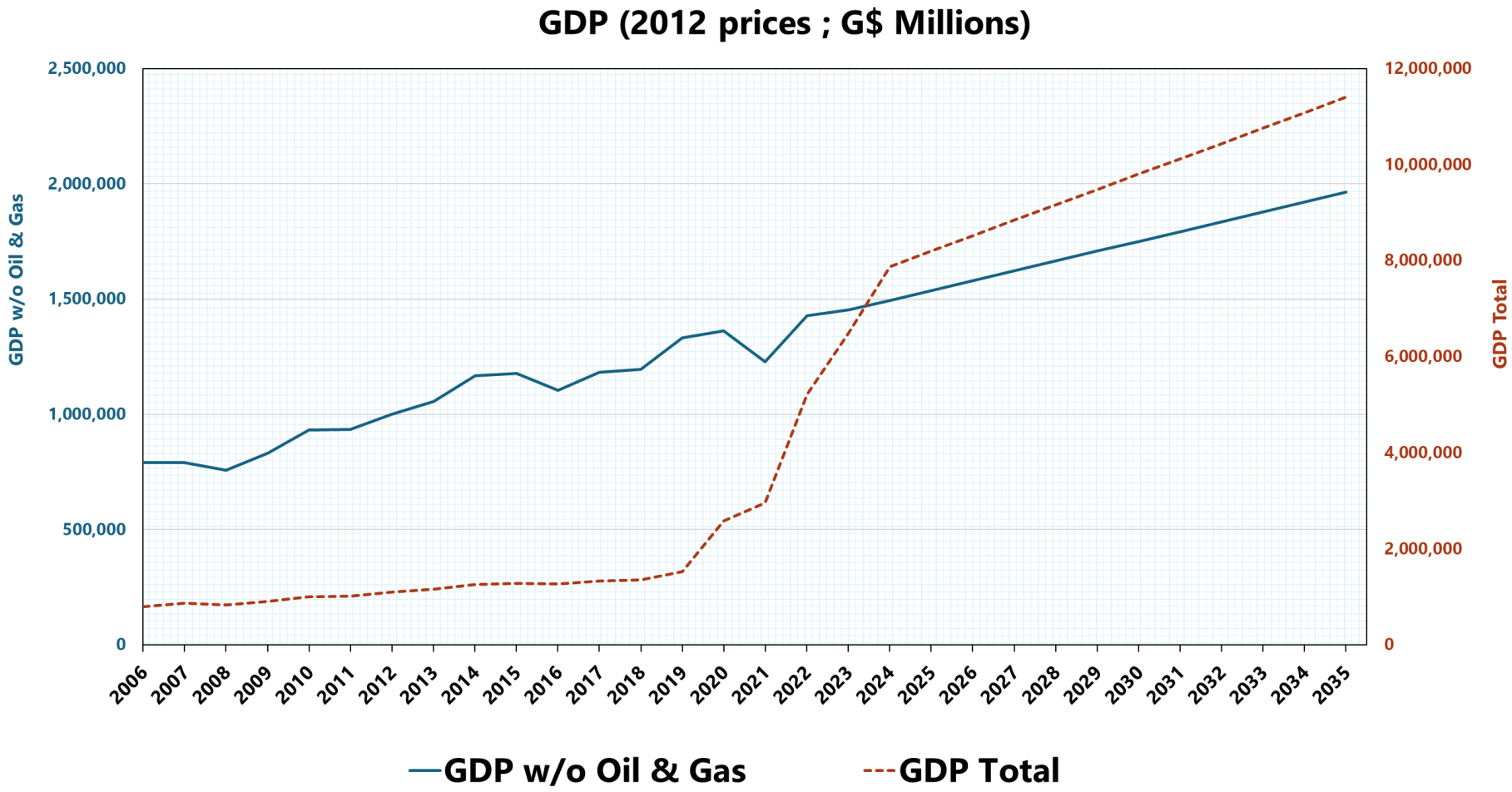


Figure 1. GDP of Guyana for the period 2006-2035.

Population

The development trend of the national population is a crucial determinant for the trajectory of anthropogenic GHG emissions because the size and growth rate of a population directly influences the level of human activities that generate these emissions. As the population grows, more people engage in activities that produce GHGs, such as transportation, energy consumption, industrial production, agriculture, and waste generation.

For example, more people mean more vehicles on the road, increased demand for electricity and heating, higher production of goods, and greater amounts of waste, all of which contribute to higher GHG emissions. Additionally, a larger population generally leads to an expanded economy. As economic activities increase to meet the needs of a growing population, the industrial and commercial sectors ramp up production, often relying on fossil fuels. This results in higher emissions from power plants, factories, and other industrial processes. Conversely, a declining population often coincides with a reduction in anthropogenic GHG emissions. With fewer people, there is less demand for transportation, energy, and goods, leading to a decrease in activities that produce GHGs.

In Guyana, although population growth stagnated until 2012 with even occasional periods of decline, it has gradually increased over the past decade due to significant economic development. This demographic shift has contributed to increasing emissions in several sectors. For instance, in the waste sector, where a notable rise in emissions from solid waste disposal is partially attributed to population growth and the growing population in Guyana has led to higher energy demand, which has led to higher emissions.

Population data for the period 1990-2021 was sourced from the Guyana Bureau of Statistics (Bureau of Statistics of Guyana, 2024). However, significant outliers were detected for the years 1990 and 2008, which were adjusted using slicing techniques. The forecasted years 2022 to 2030 were derived from a Population and Housing Census conducted prior to 2022. For the period 2030-2035, the growth rate trend from 2022-2030 was extended to calculate the population.

Figure 2 presents the actual population of Guyana for the period 1990-2021 and the forecasted population for the period 2022-2035, illustrating both historical data and future projections.

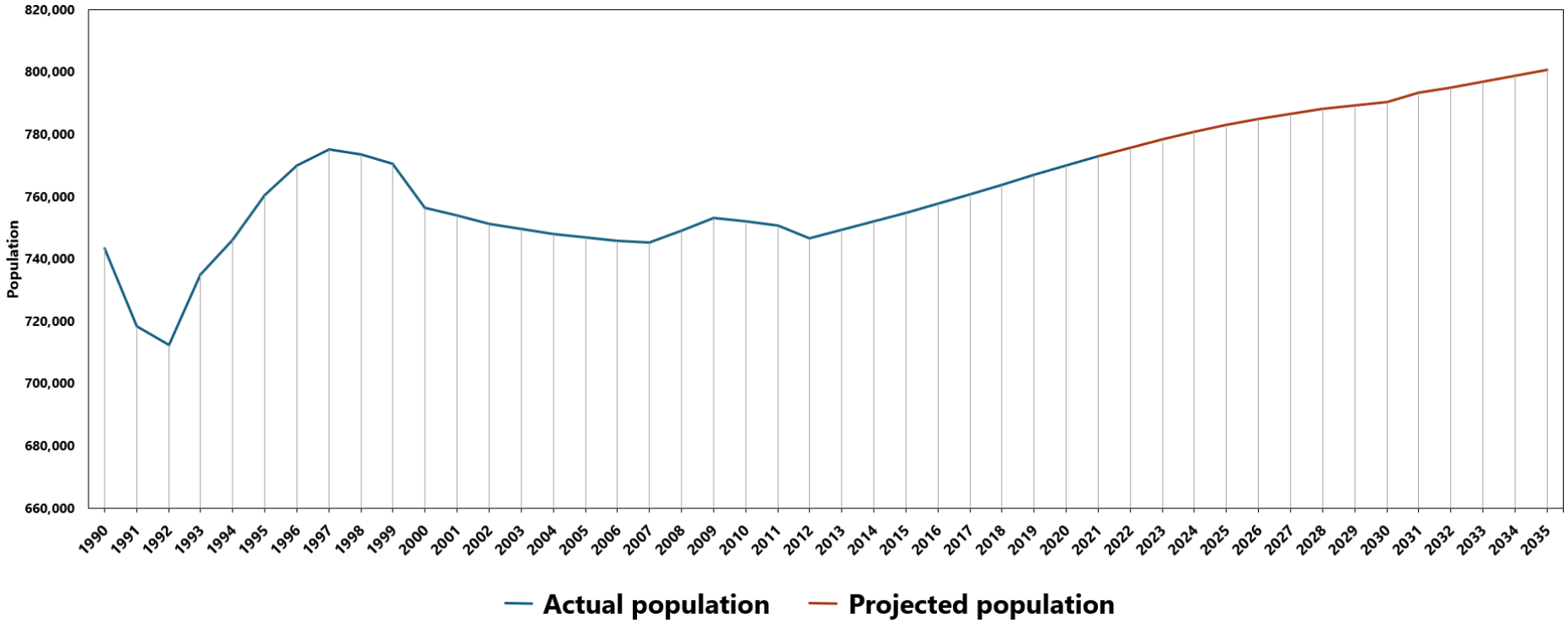


Figure 2. Population of Guyana for the period 1990-2035.

6.1.3. Sectoral framework

Furthermore, the modelling approach incorporates the evolution of sector-specific proxies to enhance the precision of sectoral model specifications. Although the overall forecasting methodology remains consistent across all sectors, the use of distinct sectoral proxies allows MITICA to account for additional determinants that can refine national-specific models by source and sink for projecting GHG emissions, particularly when these determinants have influenced historical emissions.

These sectoral proxies typically involve physical indicators rather than macroeconomic metrics. They assist in understanding how changes within specific sectors affect emissions, facilitating more accurate and tailored projections. By combining sectoral and macroeconomic proxies, the approach provides a comprehensive framework for projecting GHG emissions and removals. The national GHG emission inventory supplies historical emission data, while macroeconomic and sectoral proxies offer insights into broader factors affecting emissions across various sources and sinks.

Table 13 presents the sectoral proxies considered in the projections of GHG emissions and removals for Guyana.

Table 13. Sectoral proxies considered for GHG projections.

Proxy	Theoretical relationship
Energy demand	Energy demand is directly related to increased fossil fuel emissions due to consumption of fossil fuels. Energy can be produced endogenously or imported.
Indigenous energy supply	The amount of indigenous energy supplied (i.e. national energy production) is directly correlated with emissions from energy industries.
Oil production levels	Oil production levels have a direct impact on fugitive emissions.
Deforestation	Decreased forest land involves decreased CO_2 removals, therefore reduced net GHG emissions.
Forest cover	Increased forest trends lead to enhanced biomass growth and subsequent CO_2 removals, therefore reduced net GHG emissions.

Energy demand

Energy demand drives emissions primarily through the reliance on fossil fuels for various activities across different sectors, including transportation, industry and the residential, commercial and service sectors. As energy consumption increases to meet the needs of a growing population and expanding economy, the burning of fossil fuels leads to higher emissions GHGs, contributing to climate change.

Enhancing energy efficiency through measures such as improved insulation in buildings and the use of more efficient devices will be crucial for reducing overall energy consumption and demand. Additionally, expanding the deployment of small-scale renewable energy systems will contribute significantly to decreasing reliance on fossil fuels. These strategies not only support the reduction of fossil fuel consumption but also help mitigate environmental impacts by promoting cleaner energy alternatives.

The expansion of the oil and gas industry is expected to significantly influence the country's energy demand. As the industry scales up its operations, there will be an increased requirement for various forms of energy to support activities such as drilling, extraction, refining, and transportation. This growth will lead to higher consumption of fuels including natural gas, diesel, and crude oil, as well as increased energy needs for machinery and infrastructure. The rise in energy demand driven by the oil and gas sector will contribute to the overall national energy consumption, placing additional strain on existing energy infrastructure and requiring enhanced management strategies to address the growing energy needs.

Data on energy demand for the period 1990-2021 was obtained from the Permanent Secretariat of OLADE Guyana energy supply and demand series (OLADE, 2024). Subsequent years until 2035 were forecasted using the trend from the data from OLADE from 1990 to 2021. The projected GDP, accounting for the contribution of the oil and gas sector and assuming a decreasing elasticity between GDP and energy supply from 2023 to 2035, has been used as follows:

$$E_t = E_{2021} \cdot \left|\frac{GDP_t}{GDP_{2021}}\right|^{\varepsilon_t} \quad \{1\}$$

Where E_t is the energy demand for year t, E_{2021} is energy demand for year 2021, GDP_t the GDP of year t, GDP_{2021} is the GDP for year 2021. ε_t is the elasticity between GDP and energy demand, calculated as follows:

$$\varepsilon_t = \varepsilon_{2021} \cdot \left|\frac{\varepsilon_{2021}-\varepsilon_{2035}}{n-1}\right| \cdot (t-21) \quad \{2\}$$

Where $\mathcal{E}_t$is the initial elasticity (0.8), $\mathcal{E}_t$ is the final elasticity (0.5), n the total number of years and t the year for which the elasticity is calculated. The reduced elasticity between GDP and energy is substantiated on several studies [(Wang, 2021); (Liddle, 2023)] that evidence that increased level of economic development tend to be associated with lower interannual changes in energy consumption.

Figure 3 presents the actual energy demand of Guyana for the period 1990-2021 and the forecasted energy demand data for the period 2022-2035.

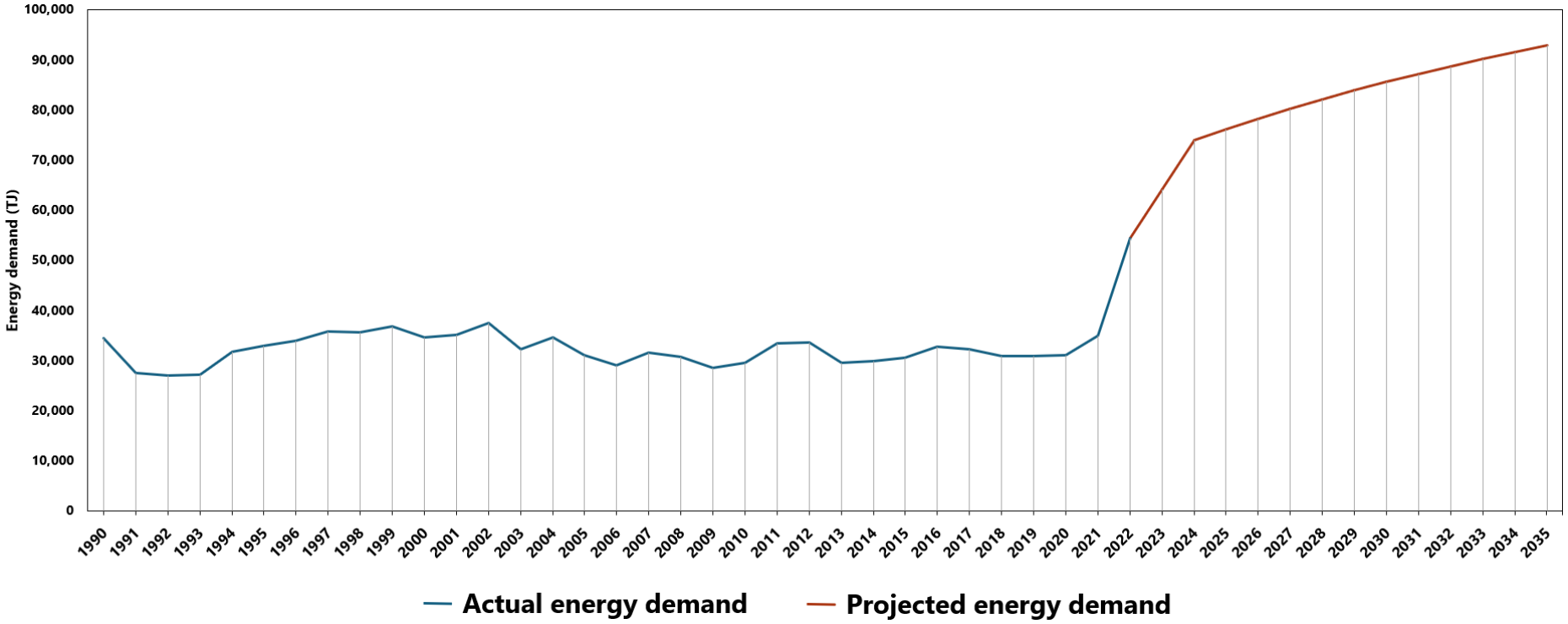


Figure 3. Energy demand in Guyana for the period 1990-2035.

Indigenous energy supply

Energy supply drives emissions primarily through the types of energy sources used to meet the demand for electricity, heat, and transportation. Indigenous energy supply in national energy systems refers to the energy produced within a country's borders from its own natural resources, as opposed to energy imported from other countries. In energy statistics terminology, indigenous production includes all forms of energy production, such as:

- Fossil Fuels: Coal, oil, and natural gas extracted from domestic reserves.
- Renewable Energy: Energy generated from renewable sources like solar, wind, hydro, geothermal, and biomass that are located within the country.
- Nuclear Energy: Energy produced from domestic nuclear power plants.
- Other Sources: Any other forms of energy that are produced domestically.

The choice between fossil fuels and non-fossil fuels (renewable energy sources or nuclear) significantly impacts GHG emissions. Fossil fuels, such as coal, oil, and natural gas, release large amounts of GHGs when burned to produce energy.

Total energy demand should align with total energy supply in the economy. Energy demand is projected to grow sharply due to the expansion of the oil and gas sector, while indigenous production of energy requires more time to commission new capacity. Thus, the gap between demand and supply may need to be covered by imported fuels. This directly affects emissions from energy industries, which include emissions from fuel consumption for electricity and heat production, as well as from refining processes.

The national energy supply is determined by various factors, including production capacities, import-export dynamics, and energy infrastructure efficiency. While the oil and gas sector's expansion will increase the consumption of specific fuels, the broader energy supply landscape is influenced by multiple elements such as production levels, market stability, and infrastructure capabilities. Therefore, despite the rising demand from the oil and gas sector, the overall energy supply is expected to remain relatively stable, shaped by a comprehensive set of factors beyond any single sector's expansion.

Data on energy supply for the period 1990-2021 was obtained from the OLADE Guyana energy supply and demand series (OLADE, 2024). Subsequent years until 2035 were forecasted using the trend from the data from OLADE from 1990 to 2021. The projected GDP without oil and gas, and assuming a decreasing elasticity between GDP and energy supply from 2023-2035, has been used to calculate energy supply, using the formulas {1} and {2} provided above.

Figure 4 presents the endogenous energy supply of Guyana for the period 1990-2021 and the forecasted endogenous energy supply data for the period 2022-2035.

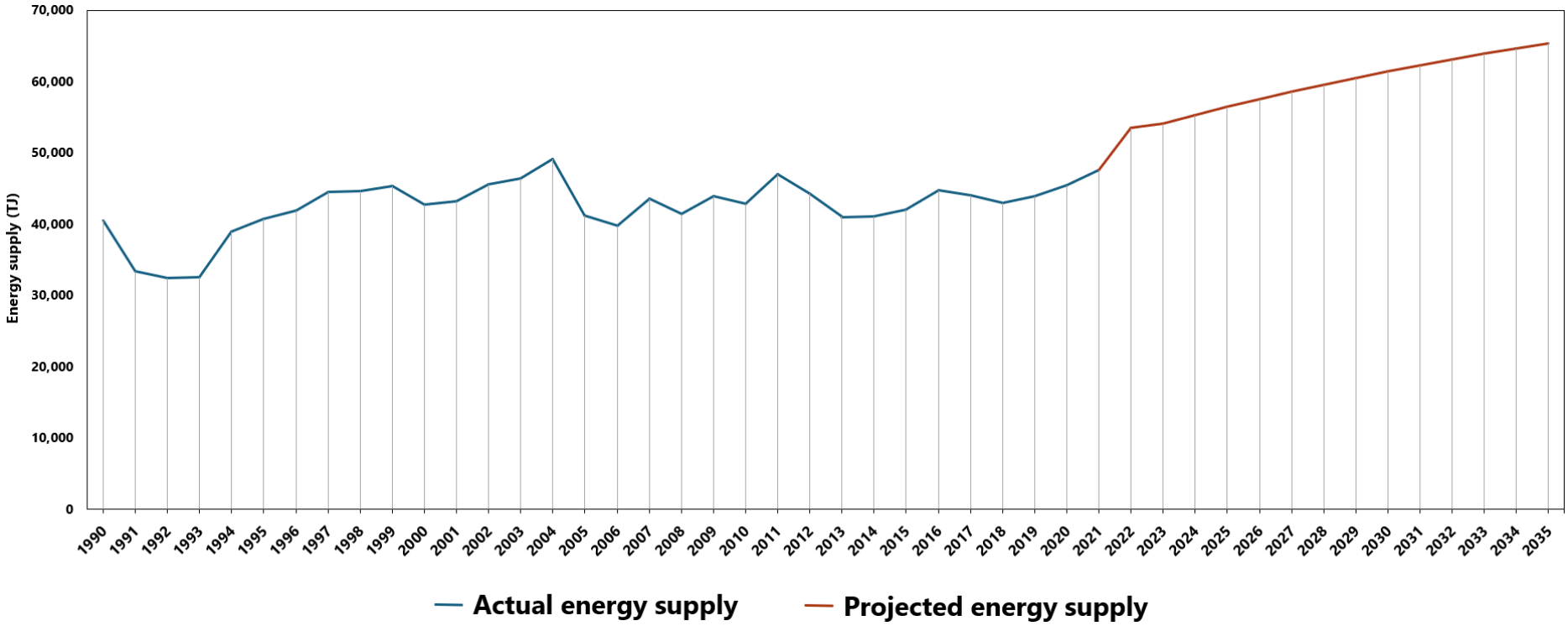


Figure 4. Indigenous energy supply in Guyana for the period 1990-2035.

Oil production levels

Oil production results in fugitive emissions, which comprise all GHG emissions from oil systems except contributions from fuel combustion. The sources of fugitive emissions from oil production include, but are not limited to, equipment leaks, evaporation and flashing losses, venting, flaring, and accidental releases (e.g., pipeline dig-ins, well blow-outs and spills). As such, oil production contributes to GHG emissions through various stages of the production process, each associated with different amounts of emissions.

In Guyana, oil production commenced in 2020 through the Liza Phase 1 Project, ExxonMobil's first Floating Production Storage and Offloading (FPSO) vessel. In February 2022, ExxonMobil's second FPSO began production in the Stabroek Block under the Liza Phase 2 Project and in 2023, the ExxonMobil's third FPSO began production under the Payara Project. Three additional oil production projects will commence in the Stabroek Block in the coming years. Consequently, the pace of oil production in Guyana is accelerating significantly, with a peak expected in 2030, after which production will gradually decline. Therefore, oil production will play a crucial role in Guyana's economic development and its low carbon development and emissions profile in the upcoming period.

Data on oil production for the period 1990-2023 was obtained from the Environmental Protection Agency (EPA). For the period 2024-2034, data was sourced from ExxonMobil Guyana Limited's (EMGL) oil production projection model released in November 2023. The year 2035 was derived by applying the growth rate trend from 2030-2034.

Figure 5 presents the actual oil production levels of Guyana for the period 1990-2024 and the forecasted oil production levels for the period 2025-2035.

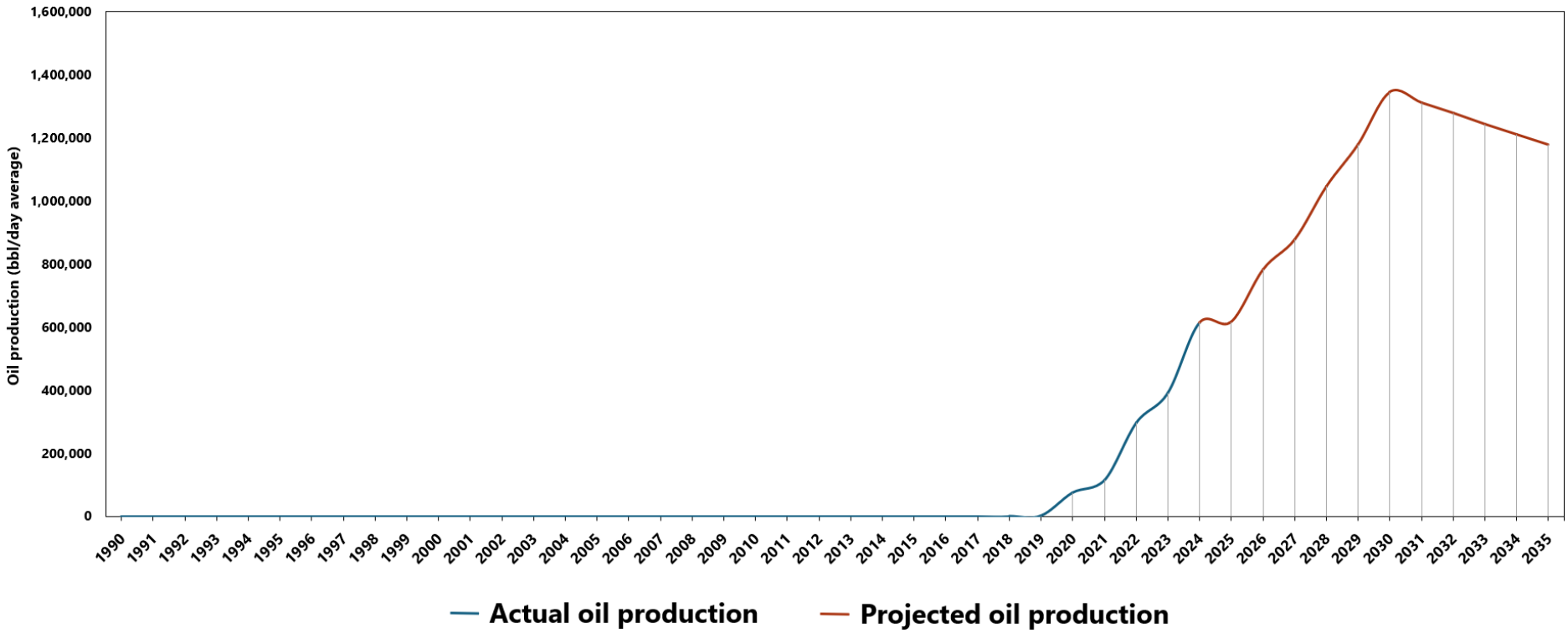


Figure 5. Oil production levels in Guyana for the period 1990-2035.

Deforestation

Forests are crucial carbon sinks because they absorb CO_2 from the atmosphere. When forests are cleared, the trees that sequester carbon are removed, drastically reducing the area's capacity to store carbon. Additionally, the carbon stored in the biomass of these trees is released back into the atmosphere as CO_2 when they are cut down or burned, significantly increasing GHG levels. Forest soils, which are rich in organic carbon, also lose their carbon storage ability when deforestation occurs. The disruption of soil structure leads to the decomposition of organic matter, further releasing CO_2, and erosion can deplete soil carbon. Furthermore, deforestation reduces the future potential for carbon sequestration by eliminating trees that would continue to absorb CO_2 over their lifespans. As such, deforestation diminishes the land's ability to act as a carbon sink, exacerbating climate change by raising atmospheric GHG concentrations.

Guyana has maintained a historically low deforestation rate, making it a HFLD country with approximately 85% forest cover. Deforestation has varied between years, showing peaks in 2013 and 2019, when the deforestation rates were 0.079% and 0.071%, respectively, and considerable drops in 2010 and 2022, when the deforestations rates were 0.021% and 0.036%, respectively. Mining is the primary driver of deforestation in Guyana, accounting for 85% of all deforestation between 2001 and 2012, and 74% of deforestation between 2013 and 2020. Agriculture, roads and mining infrastructure, forestry infrastructure, and forest fire are the remaining drivers of deforestation and forest degradation in Guyana.

Data on deforestation rates for the period 1990-2009 were obtained through the Guyana ART Workbook for REDD+ from the Guyana Forestry Commission, while for the period 2010-2022 data was obtained through the Guyana REDD+ MRVS Report – Assessment Year 2020 (Guyana Forestry Cosmission, 2020). The forecasted period 2023-2030 were derived from deforestation projections conducted by the Guyana Forestry Commission. For the period 2030-2035, the same deforestation rate as 2023-2030 is applied.

Figure 6 presents the actual deforestation rates of Guyana for the period 1990-2022 and the forecasted deforestation rates for the period 2023-2035.

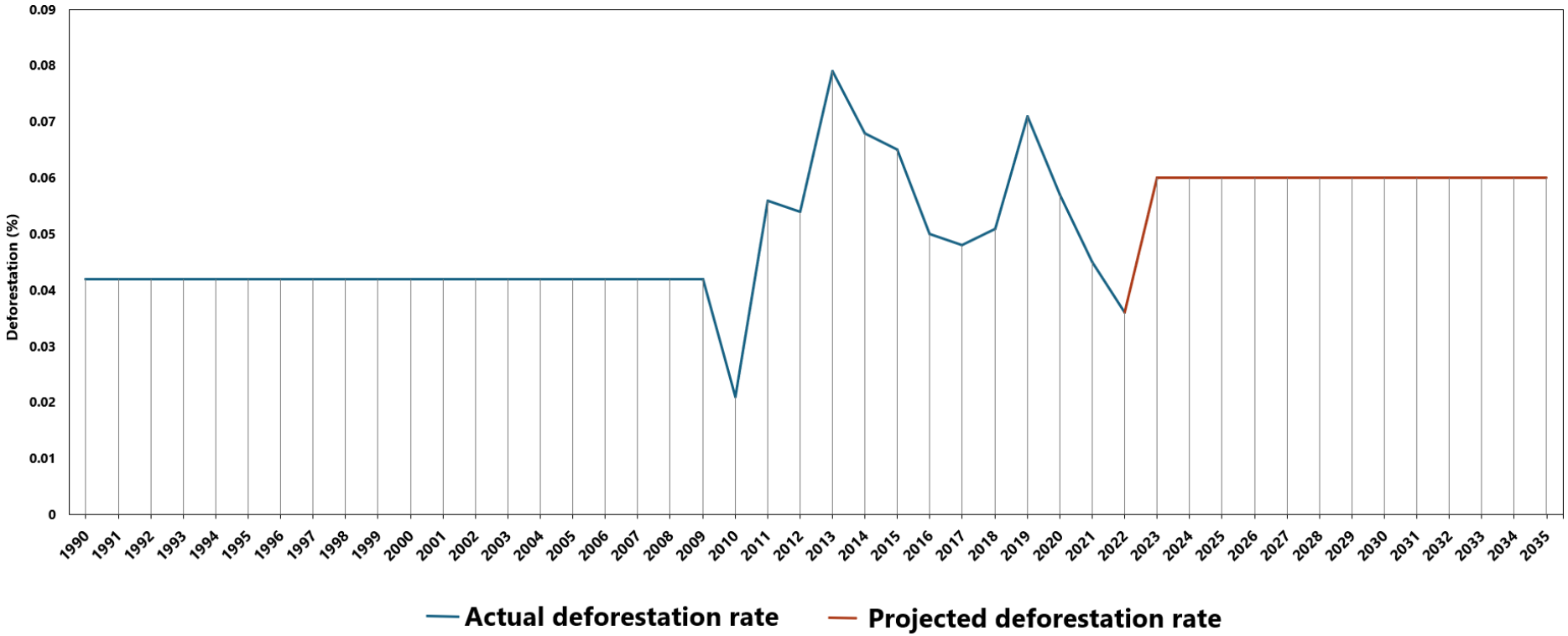


Figure 6. Deforestation rates in Guyana for the period 1990-2035.

Forest cover

Increased forest trends lead to enhanced biomass growth, which means that trees and other vegetation are growing more abundantly and healthily. This growth results in higher rates of photosynthesis, where plants absorb CO_2 from the atmosphere and convert it into organic matter, such as leaves, stems, and roots. As a result, there is a substantial increase in the amount of CO_2 being removed from the atmosphere and stored in the forest biomass. This process of carbon sequestration helps to mitigate climate change by reducing the overall concentration of GHGs in the atmosphere. When forests grow and expand, they act as carbon sinks, capturing more CO_2 than they release. This leads to a net reduction in GHG emissions, contributing to a decrease in the global warming potential.

In summary, the trend of increasing forest areas and enhanced biomass growth directly contributes to greater CO_2 removal from the atmosphere. This process not only supports forest ecosystems and biodiversity but also plays a critical role in addressing climate change by lowering net GHG emissions.

Guyana has maintained a historically low deforestation rate, making it a HFLD country with forests covering approximately 85% of the country (18.39 million hectares) until around 2017. Slight decreases in forest cover have occurred since then, primarily due to activities such as logging, agriculture, and mining driving deforestation in Guyana.

Data on forest cover levels for the period 1990-2022 were obtained through the Guyana ART Workbook for REDD+ from the Guyana Forestry Commission. Subsequent years until 2035 were forecasted using the trend from the data from the GFC from 1990 to 2022.

Figure 7 presents the actual forest cover levels of Guyana over the period 2010 to 2020.

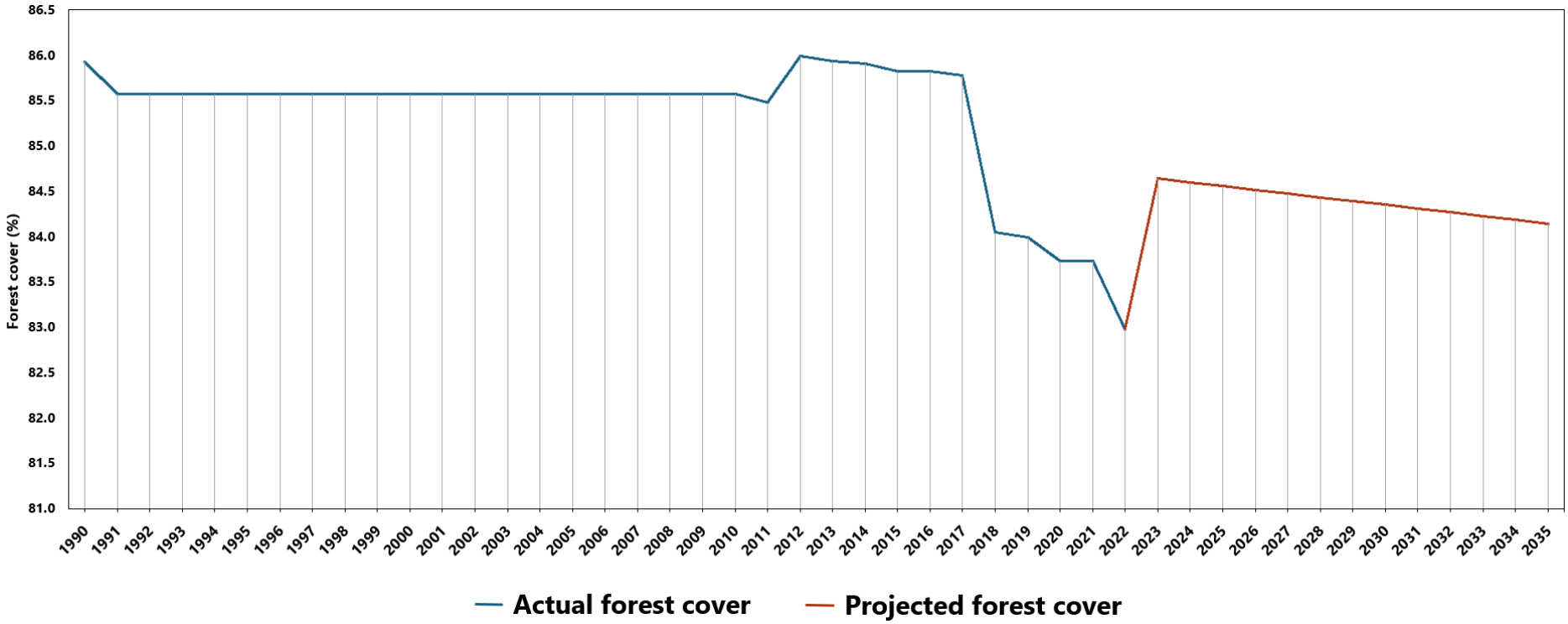


Figure 7. Forest cover levels in Guyana for the period 1990-2035.

6.2. Assumptions on the PAMs in the with measures (WM) scenario

Policy or mitigation scenarios encompass a distinct set of PAMs. PAMs are all types of actions, measures, and policies that reduce emissions or enhance sinks of GHGs. These policy or mitigation scenarios allow for observing differences in emission profiles resulting from policy implementations, ultimately facilitating the assessment whether Guyana's defined mitigation targets are achieved.

In section 4, a detailed overview of the mitigation actions within the energy, forestry, and cross-cutting sectors in Guyana is provided. This overview indicates that the majority of these PAMs were implemented before the latest national GHG inventory year of 2022, in some cases as far back as 2010. Therefore, it is assumed that the GHG emission reductions resulting from the implementation of these PAMs are already reflected in Guyana's historical emissions profile up to 2022.

Moreover, it is important to note that the estimated GHG emission reductions for each PAM reported in section 4 are in several cases derived from desk-based research.

Given this context, Guyana has made the informed assumption that the GHG emission reductions from these implemented PAMs are reflected in the national GHG inventory profile. Consequently, the WM scenario has been developed based on the historical GHG dynamics of each emission source and sink. This scenario incorporates the projected macroeconomic and sectoral frameworks previously presented, ensuring a robust and realistic projection of future emissions.

This approach in developing the WM scenario also ensures alignment with the goals and objectives outlined in Guyana's two main national climate change policies, namely the NDC and the LCDS. The mitigation actions presented in section 4 are primarily aligned with the goals and objectives outlined in these key national policies.

6.3. With measures (WM) scenario

The WM scenario depicts GHG trends encompassing currently implemented and adopted PAMs. More information on the assumptions on the PAMs in the WM scenario is provided in the previous section. For the individual GHG impact of PAMs please refer to section 4.

In the WM scenario without LULUCF (Figure 8), the national GHG emissions are 8,488.06 Gg CO_2eq in 2022 according to the latest GHG inventory. GHG emissions are projected to subsequently peak at 20,210.66 Gg CO_2eq in 2031 and by 2035, the GHG emissions are projected to be 16,096.96 Gg CO_2eq.

In the WM scenario with LULUCF (Figure 9), the national GHG emissions are significantly influenced by the high removals. In 2022, the national GHG emissions with LULUCF were -133,919.14 Gg CO_2eq. By 2035, the GHG emissions, with LULUCF, are projected to be -122,843.04 Gg CO_2eq. Guyana is employing a combination of conservation and sustainable forest management strategies to safeguard its forests, recognising their vital role in mitigating climate change by absorbing substantial amounts of CO_2.

The largest contributor to the increase in projected GHG emissions until 2035 is the oil and gas sector (categories 1B1a and 1B2a) as illustrated in Figure 10. This correlates with the pace at which oil production in Guyana is accelerating following initial commencement in 2020. In response, Guyana has been implementing substantial PAMs related to the energy sector to transition towards a clean energy matrix from the current fossil-dependent matrix.

Projected GHG emissions from the agriculture and waste sectors are relatively limited. Agriculture GHG emissions will rise to 2,825.54 Gg CO_2eq by 2035, mainly due to the growing livestock population in Guyana. The waste sector is projected to see only a minor increase, with emissions reaching 427.73 Gg CO_2eq by 2035, primarily due to increased waste generation linked to population growth. Although Guyana has not yet prioritised mitigation PAMs in these sectors, they will eventually become part of the mitigation agenda to limit further projected GHG emissions rises.

The IPPU sector in Guyana is limited, with no ongoing industrial activities. Activities within this sector are solely associated with the use of products serving as substitutes for Ozone Depleting Substances (ODS). However, due to data unavailability, projected GHG emissions from these categories have not been estimated, as described in the chapter on the national GHG inventory of Guyana.

Table 14 provides an overview of the total GHG emissions in the WM scenario by sector and for the totals with and without LULUCF up to 2035.

Table 14. Projected total GHG emissions in the WM scenario (Gg CO_2eq).

Sector	1990	1995	2000	2005	2010	2015	2020	2022*	2025	2030	2035
Energy	1,265.88	1,631.73	1,768.28	1,484.62	1,849.70	2,145.04	4,904.53	6,116.10	10,033.90	17,086.19	12,843.68
IPPU	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Agriculture	1,123.39	1,572.71	1,569.69	1,460.76	1,797.39	2,197.35	2,252.51	1,927.02	2,346.49	2,570.05	2,825.54
LULUCF	-143,717.72	-144,049.40	-144,381.08	-144,712.75	-145,044.43	-143,970.99	-139,803.83	-142,407.20	-141,304.70	-140,242.77	-138,940.00
Waste	351.04	353.56	358.21	358.12	353.91	383.06	428.38	444.94	432.16	436.88	427.73
Total without LULUCF	2,740.31	3,558.00	3,696.18	3,303.49	4,001.00	4,725.45	7,585.42	8,488.06	12,812.55	20,093.13	16,096.96
Total with LULUCF	-140,977.41	-140,491.40	-140,684.89	-141,409.26	-141,043.43	-139,245.53	-132,218.41	-133,919.14	-128,492.15	-120,149.64	-122,843.04

***** The year 2022 is the reference year for the projections of GHG emissions and removals.

NE – Not Estimated. Historical and projected GHG emissions associated with categories within the IPPU sector occurring in Guyana have not been estimated due to data being unavailable.

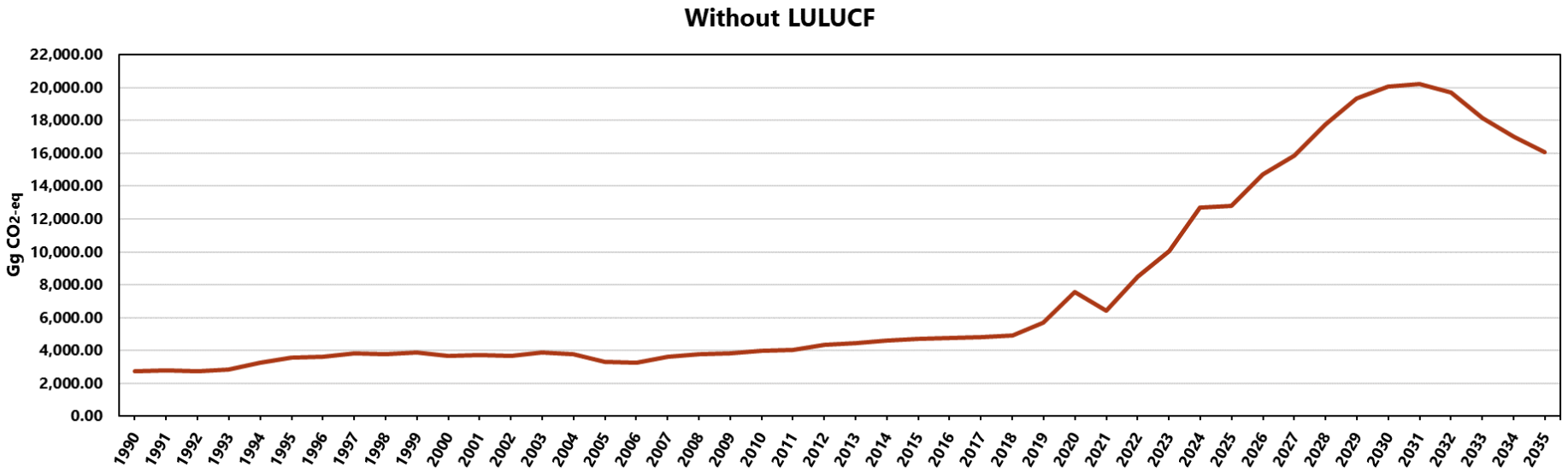


Figure 8. Projected total GHG emissions in the WM scenario without LULUCF.

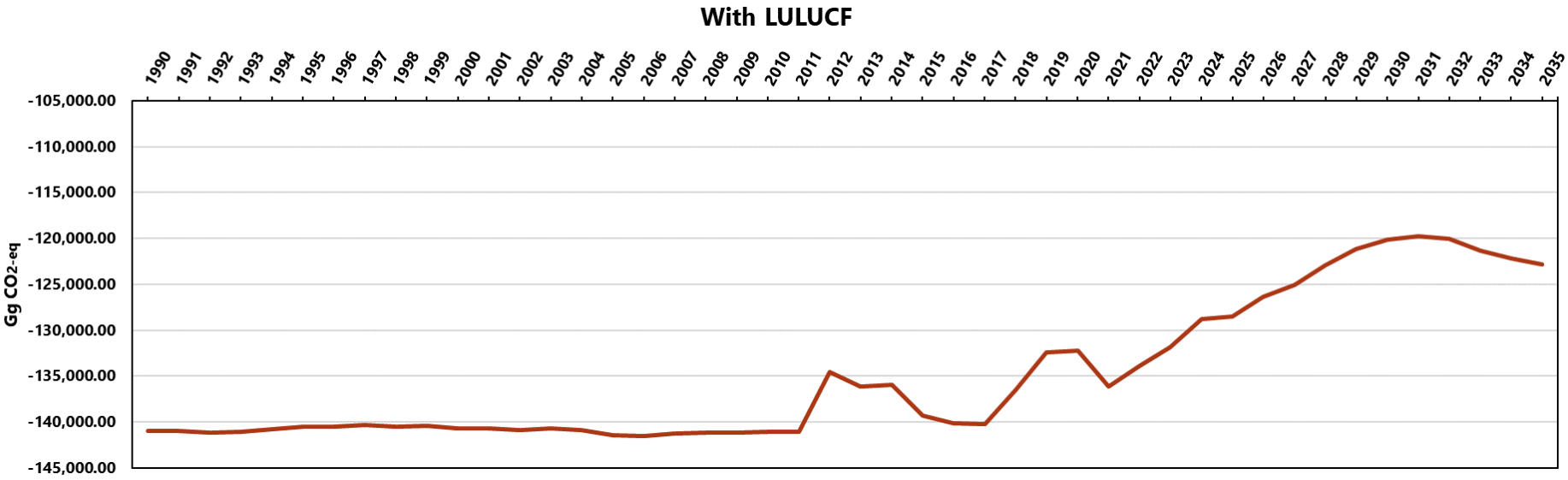


Figure 9. Projected total GHG emissions in the WM scenario with LULUCF.

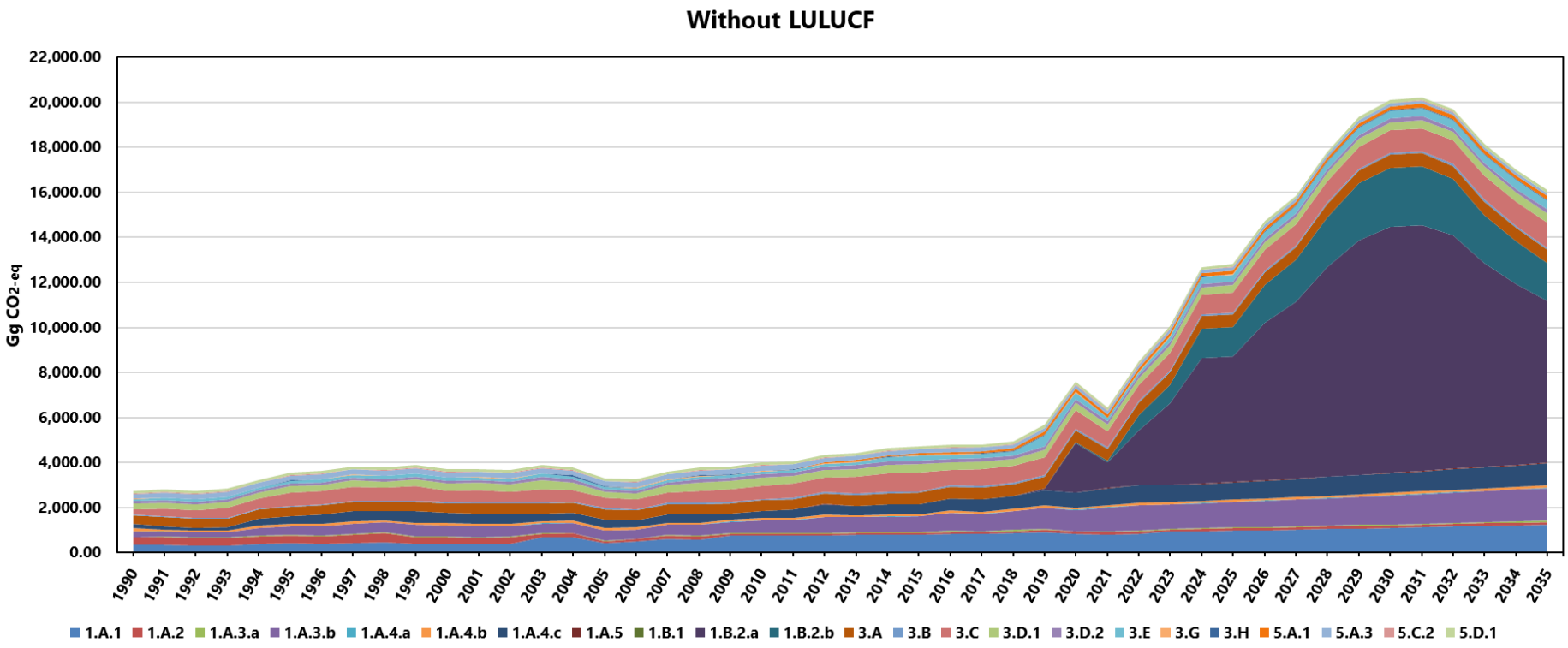


Figure 10. Projected total GHG emissions in the WM scenario without LULUCF split by sectoral categories.

6.3.1. Energy sector

GHG emissions in the energy sector are projected to increase (Figure 11) from 6,166.10 Gg CO_2eq in 2022 according to the latest GHG inventory to 17,086.19 Gg CO_2eq in 2030 and decrease to 12,843.68 Gg CO_2eq in 2035. This increase is primarily driven by the commencement and expansion of oil production in the country, leading to higher projected GHG emissions in the oil and gas sector (categories 1B1a and 1B2a). Peak oil production is expected in 2030, after which production will decline, resulting in reduced projected GHG emissions from the oil and gas sector between 2030 and 2035.

However, other categories within the energy sector are also experiencing an upward trend in projected GHG emissions. Emissions from fuels combusted by fuel extraction or energy-producing industries will continue to rise due to Guyana's reliance on petroleum imports. Additionally, emissions from transportation activities, particularly road transport, are expected to grow due to population growth and economic development, key factors driving higher fuel consumption. Emissions in the residential, commercial, and institutional sectors, as well as from fuel combustion in agriculture, forestry, fishing, and fishing industries, are also projected to rise in line with increased fuel consumption trends.

To mitigate these increased GHG emissions in the energy sector, Guyana has been actively implementing PAMs to support the transition from a fossil-dependent energy matrix to a clean energy matrix. These PAMs are focused on changing how energy is generated.

Table 15 provides an overview of the projected energy sector GHG emissions in the WM scenario up to 2035.

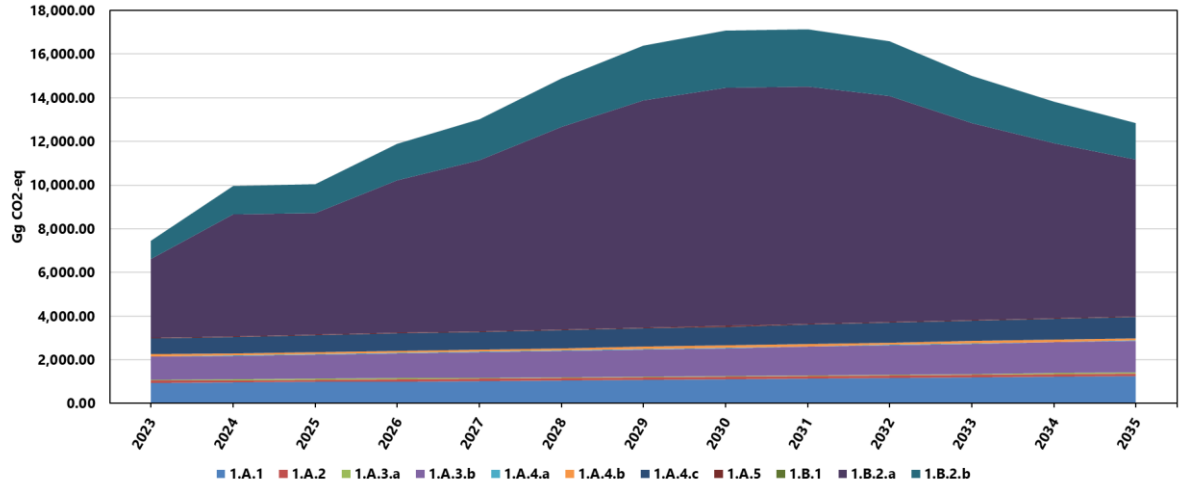


Figure 11. Projected energy sector GHG emissions in the WM scenario for the period 2023-2035.

Table 15. Projected energy sector GHG emissions in the WM scenario (Gg CO_2eq).

Sector	1990	1995	2000	2005	2010	2015	2020	2022*	2025	2030	2035
1.A.1	335.69	413.02	391.16	409.89	759.67	785.06	847.82	842.83	977.43	1,096.62	1,237.29
1.A.2	329.55	348.44	283.39	90.27	84.98	79.66	81.30	88.57	102.71	115.24	130.02
1.A.3.a	34.83	42.23	41.55	30.99	27.60	40.92	30.01	37.67	43.80	46.54	49.14
1.A.3.b	236.39	376.62	483.74	452.51	544.23	693.93	923.80	1,118.54	1,114.39	1,272.22	1,446.61
1.A.4.a	5.85	5.85	5.06	8.23	8.03	10.03	14.52	16.86	15.99	18.22	20.47
1.A.4.b	150.58	96.66	103.10	94.12	101.51	93.97	88.52	109.23	100.00	101.92	103.70
1.A.4.c	172.07	346.99	457.77	386.56	313.52	427.56	670.25	767.50	765.49	858.31	970.93
1.A.5	0.92	1.91	2.53	12.04	10.18	13.91	24.59	33.88	29.63	34.19	39.65
1.B.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.B.2.a	0.00	0.00	0.00	0.00	0.00	0.00	2,188.38	2,414.52	5,577.89	10,905.34	7,184.80
1.B.2.b	0.00	0.00	0.00	0.00	0.00	0.00	35.33	686.50	1,306.57	2,637.59	1,661.08
Total	1,265.88	1,631.73	1,768.28	1,484.62	1,849.70	2,145.04	4,904.53	6,116.10	10,033.90	17,086.19	12,843.68

***** The year 2022 is the reference year for the projections of GHG emissions and removals.

6.3.2. Agriculture sector

The agriculture sector currently contributes a relatively small proportion of total national GHG emissions, with 1,927.02 Gg CO_2eq reported in 2022. However, these emissions are projected to rise to 2,825.54 Gg CO_2eq by 2035 (Figure 12). This increase is primarily attributable to the growing livestock population in Guyana and expanded rice cultivation practices, both of which are linked to population growth, economic development and previous government investment in irrigation and drainage infrastructure.

While Guyana has not yet prioritised mitigation PAMs in the agriculture sector, the country recognises the importance of addressing the projected increase in GHG emissions. As part of its broader climate strategy, Guyana plans to incorporate the agriculture sector into its mitigation agenda to limit further rises in emissions. This will involve developing and implementing targeted PAMs to reduce the sector's GHG emissions.

Table 16 provides an overview of the projected agriculture sector GHG emissions in the WM scenario up to 2035.

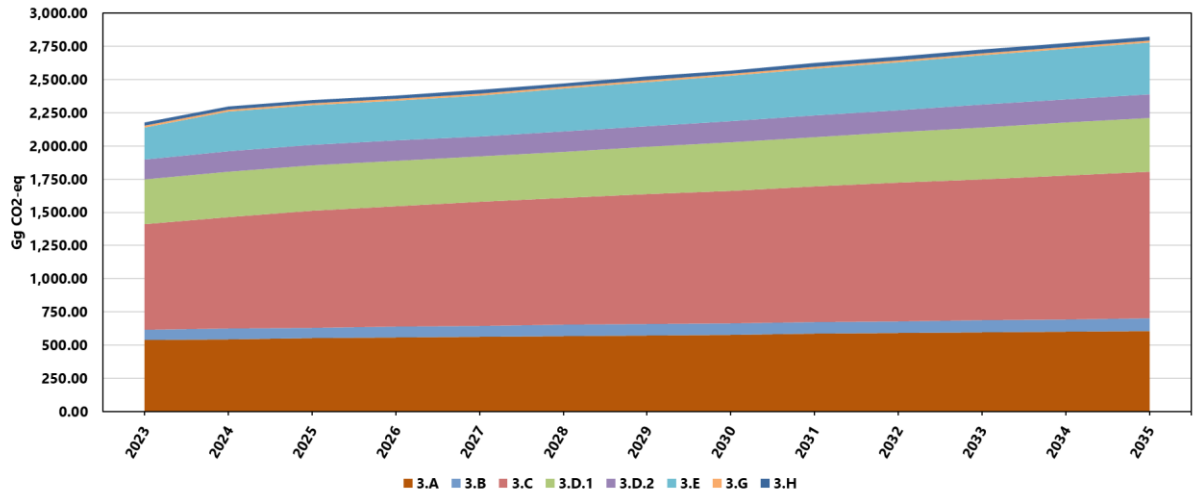


Figure 12. Projected agriculture sector GHG emissions in the WM scenario for the period 2023-2035.

Table 16. Projected agriculture sector GHG emissions in the WM scenario (Gg CO_2eq).

Sector	1990	1995	2000	2005	2010	2015	2020	2022*	2025	2030	2035
3.A	381.22	401.10	418.56	433.95	459.95	503.45	524.44	535.68	551.63	579.59	607.79
3.B	43.65	47.65	51.65	55.73	61.27	69.10	74.83	77.56	80.46	86.59	92.70
3.C	227.31	585.63	512.74	471.91	581.51	844.26	821.75	708.62	879.58	995.74	1,106.20
3.D.1	269.75	283.31	321.30	259.67	382.59	366.14	330.24	299.92	345.12	365.07	405.56
3.D.2	103.71	110.41	126.31	105.03	153.11	149.55	145.10	139.06	153.39	158.86	176.48
3.E	79.42	124.90	118.78	113.27	122.97	237.71	316.09	139.52	296.61	342.00	392.01
3.G	11.35	13.07	14.24	13.89	12.37	14.43	14.95	15.11	15.08	15.33	15.59
3.H	6.98	6.63	6.10	7.30	23.62	12.70	25.12	11.56	24.62	26.89	29.21
Total	1,123.39	1,572.71	1,569.69	1,460.76	1,797.39	2,197.35	2,252.51	1,927.02	2,346.49	2,570.05	2,825.54

***** The year 2022 is the reference year for the projections of GHG emissions and removals.

6.3.3. LULUCF sector

Guyana is a net carbon sink, with GHG removals from the LULUCF sector approximately being ten times greater than the national GHG emissions. This underscores the critical role of Guyana's forests as a significant carbon sink, highlighting their importance in mitigating climate change.

Projected GHG removals in the LULUCF sector are expected to decrease slightly, from -142,407.20 Gg CO_2eq in 2022 to-138,940.00 Gg CO_2eq by 2035 (Figure 13). This moderate increase in emissions underscores the need for sustained and enhanced efforts to maintain and improve the carbon sequestration capacity of the country's forests.

To address this, Guyana is employing a combination of conservation and sustainable forest management strategies to safeguard its forests through effective and measurable actions. Recognising the vital role of forests in mitigating climate change by absorbing substantial amounts of CO_2, Guyana is implementing a range of initiatives. These include institutional strengthening for the implementation of REDD+ Partners, enforcing and governing the Guyana-EU Forest Law, implementing the REDD+ Monitoring Reporting & Verification System (MRVS), and establishing a Forest Carbon Partnership Facility.

Table 17 provides an overview of the projected LULUCF sector GHG emissions in the WM scenario up to 2035.

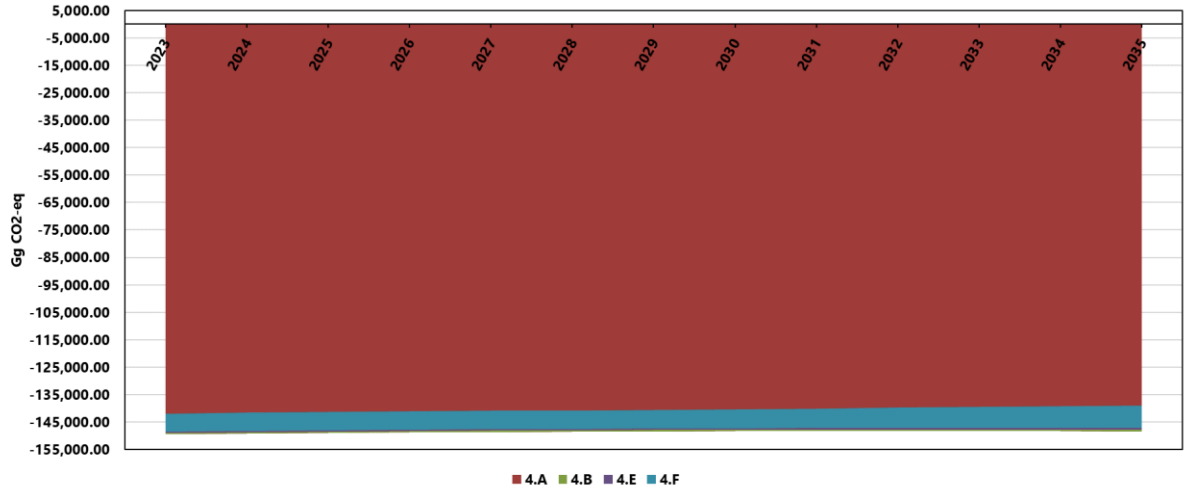


Figure 13. Projected LULUCF sector GHG emissions in the WM scenario for the period 2023-2035.

Table 17. Projected LULUCF sector GHG emissions in the WM scenario (Gg CO_2eq).

Sector	1990	1995	2000	2005	2010	2015	2020	2022*	2025	2030	2035
4.A	-152,319.30	-152,650.98	-152,982.65	-153,314.33	-153,646.01	-152,606.83	-148,089.19	-148,875.77	-149,003.64	-148,296.44	-148,348.45
4.B	564.80	564.80	564.80	564.80	564.80	940.12	1,125.86	476.21	525.29	544.02	604.36
4.E	320.02	320.02	320.02	320.02	320.02	565.61	376.24	457.89	503.19	548.20	591.19
4.F	7,716.75	7,716.75	7,716.75	7,716.75	7,716.75	7,130.11	6,783.28	5,534.47	6,670.46	6,961.46	8,212.90
Total	-143,717.72	-144,049.40	-144,381.08	-144,712.75	-145,044.43	-143,970.99	-139,803.83	-142,407.20	-141,304.70	-140,242.77	-138,940.00

***** The year 2022 is the reference year for the projections of GHG emissions and removals.

6.3.4. Waste sector

The waste sector contributes a limited proportion of total national GHG emissions, with 444.94 Gg CO_2eq reported in 2022. These emissions are projected to decrease to 427.73 Gg CO_2eq by 2035 (Figure 14). This steady evolution of emissions is due to a bifold effect. On one side, an increase in population will lead to more emissions from solid waste management. On the other side, there is a projected reduction attributable to category 4A3, as newly generated municipal solid waste (MSW) is increasingly diverted away from controlled and open dumps for disposal at the Haags Bosch Landfill.

As such, while Guyana has not yet prioritised mitigation PAMs in the waste sector, the country is making significant investments to enhance solid waste management and disposal technologies. This includes the inauguration of the Haags Bosch Sanitary Landfill, the rehabilitation of open dumpsites, and efforts to control illegal and informal waste management techniques. Additionally, Guyana is promoting community-scale composting and recycling initiatives, and there have been substantial achievements in improving sanitation infrastructure.

The primary focus for the waste sector has been on improving sanitation, concentrating on human and environmental health. These efforts have already contributed to a reduction in GHG emissions, and once the waste sector is fully integrated into Guyana's mitigation agenda, further reductions are envisioned.

Table 18 provides an overview of the projected waste sector GHG emissions in the WM scenario up to 2035.

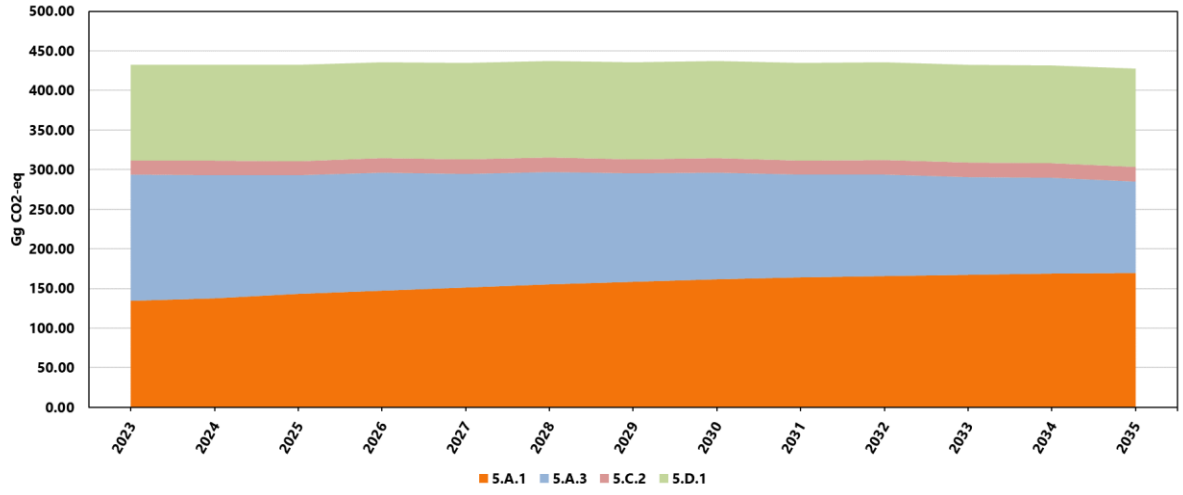


Figure 14. Projected waste sector GHG emissions in the WM scenario for the period 2023-2035.

Table 18. Projected waste sector GHG emissions in the WM scenario (Gg CO_2eq).

Sector	1990	1995	2000	2005	2010	2015	2020	2022*	2025	2030	2035
5.A.1	0.00	0.00	0.00	0.00	0.00	71.13	128.63	147.73	142.82	161.29	169.34
5.A.3	215.51	216.60	219.33	221.63	221.84	183.23	163.42	159.25	150.08	135.05	116.01
5.C.2	21.72	21.76	21.94	21.88	21.65	17.18	18.12	17.85	18.02	18.18	18.42
5.D.1	113.82	115.19	116.94	114.61	110.41	111.53	118.21	120.12	121.24	122.36	123.97
Total	351.04	353.56	358.21	358.12	353.91	383.06	428.38	444.94	432.16	436.88	427.73

***** The year 2022 is the reference year for the projections of GHG emissions and removals.

6.4. Sensitivity analysis

The modelling results are significantly influenced by the assumptions and the chosen modelling framework. For the projections presented in this report, the selected macroeconomic and sectoral framework provides an overarching pathway for the country's socioeconomic development. Consequently, national emission sources and sinks are driven by these factors, along with the historical progression of each time series and its main determinants. In the case of Guyana, the substantial expansion of the oil and gas sector and its likely separation from the aggregated activity levels of other economic sectors highlight the selection of GDP as a primary factor impacting the uncertainty of the estimates. Therefore, a sensitivity analysis has been conducted considering two alternative GDP pathways:

- Maximum GDP: This pathway applies the expansion of the oil and gas sector to all economic sectors.
- Minimum GDP: This pathway assumes zero real GDP growth from 2023 to 2035.

The modelling exercise has been repeated within MITICA using these two alternative GDP pathways instead of the GDP used in the WM scenario. It is important to note that the GDP applied in the WM scenario consists of a GDP series excluding the oil and gas sector, used as one of the proxies added into the models by category, and the GDP series including the oil and gas sector, which is considered only for fugitive emissions (emission sources under category 1.B).

The sensitivity analysis provides a measure of the upper and lower bounds of the estimates based on the GDP assumptions. The sensitivity analysis is developed ceteris paribus, meaning that all other modelling parameters remain unchanged. The results of the sensitivity analysis are described below by the relevant category. Categories unaffected by GDP are not included in this report.

Emission levels in the energy industry and the manufacturing industry are notably affected by the GDP trend, as observed in Figure 15.

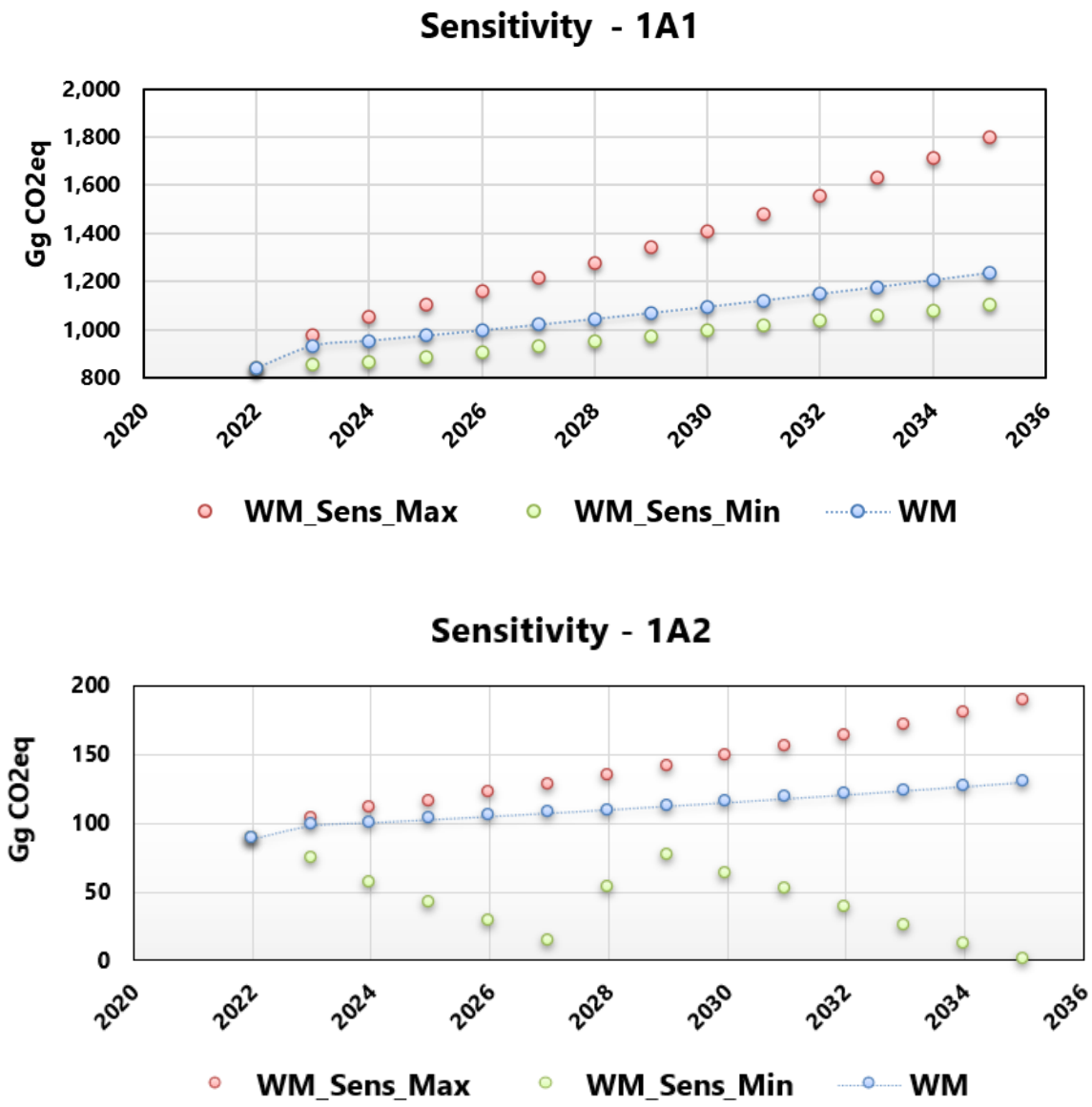


Figure 15. Sensitivity results for energy industries (1A1) and Manufacturing industries and construction (1A2).

The emissions from autoproducers of electricity should be reported where they occur and not in category 1A1. However, the inventory of Guyana includes these emissions in this category, which would produce relevant emissions in category 1A1. Considering an expansion in the GDP this adds significant pressure to the activity, reflected in augmented emissions in the category. The lower bound of emissions in this category remain high, as population levels and its associated energy demand is expected to remain steady even with reduced economic growth.

In the case of manufacturing industries, the reference emissions of Guyana are small, and significant changes in this category are not expected in the short term; however, when

"forcing" the model to consider an expanded GDP, the emissions would growth from 130 Gg to 189 Gg of CO_2eq by 2035.

In the case of civil aviation, the GDP series considered does not result in significant changes in emissions. The nature of this activity and its evolution suggest that the model accurately captures the characteristics of the emission source, providing evidence of the robustness of the results. Conversely, road transportation is significantly affected by overall GDP when activity levels expand, but not when activity levels remain stable. This indicates an inelastic demand for aggregate land transport in Guyana, reflected in stable emission levels even during periods of economic contraction or stagnation (Figure 16).

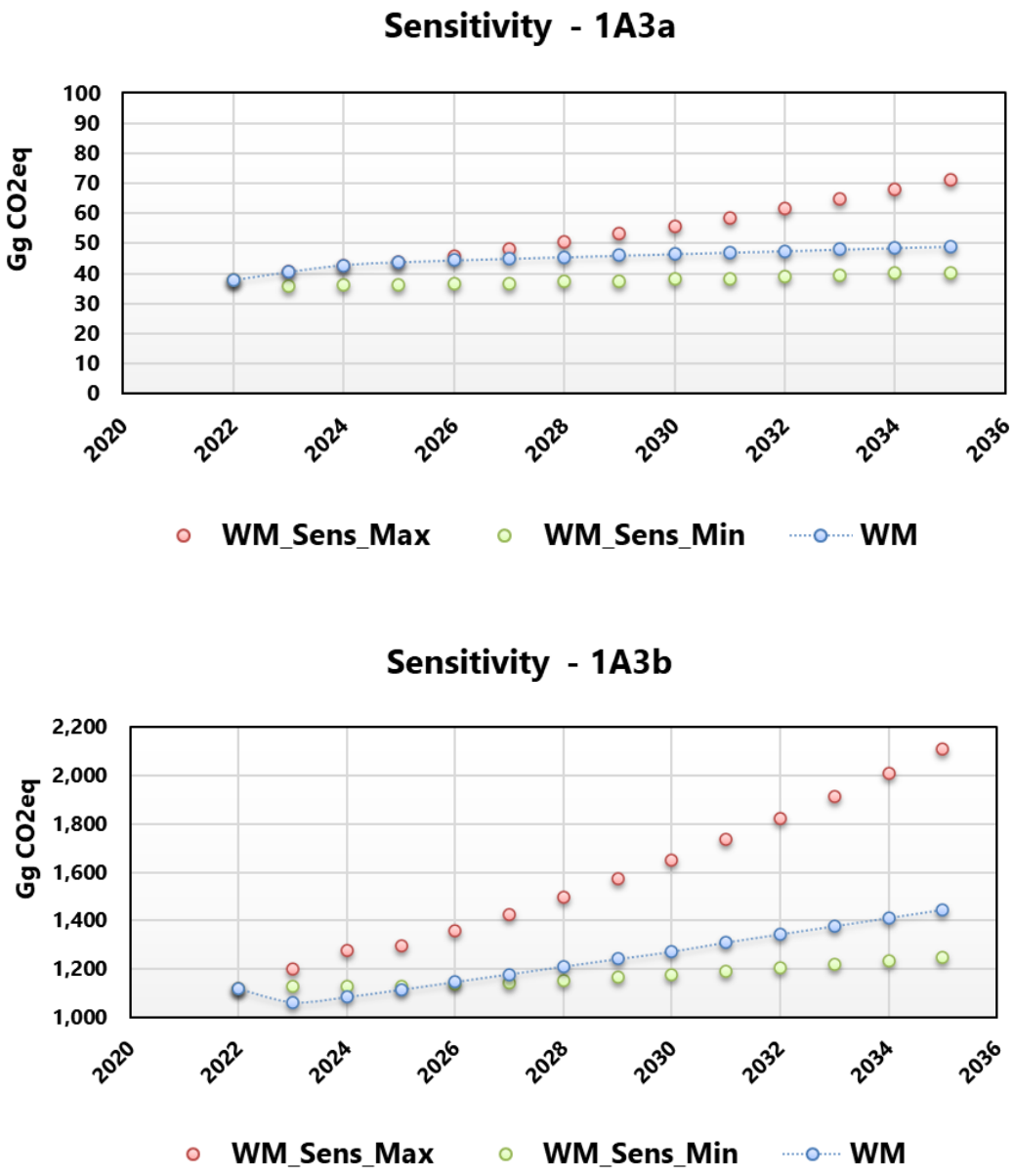
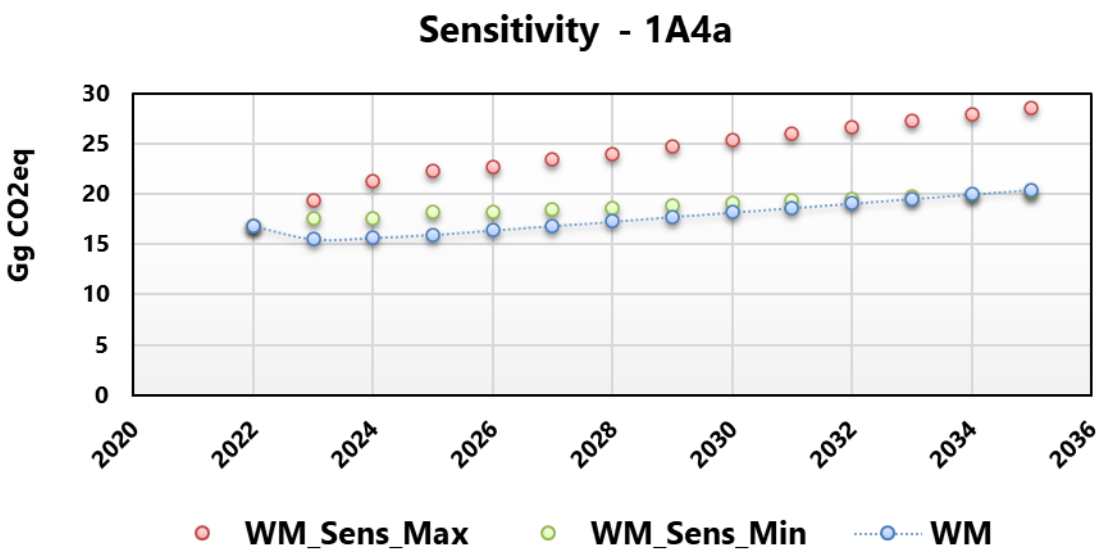
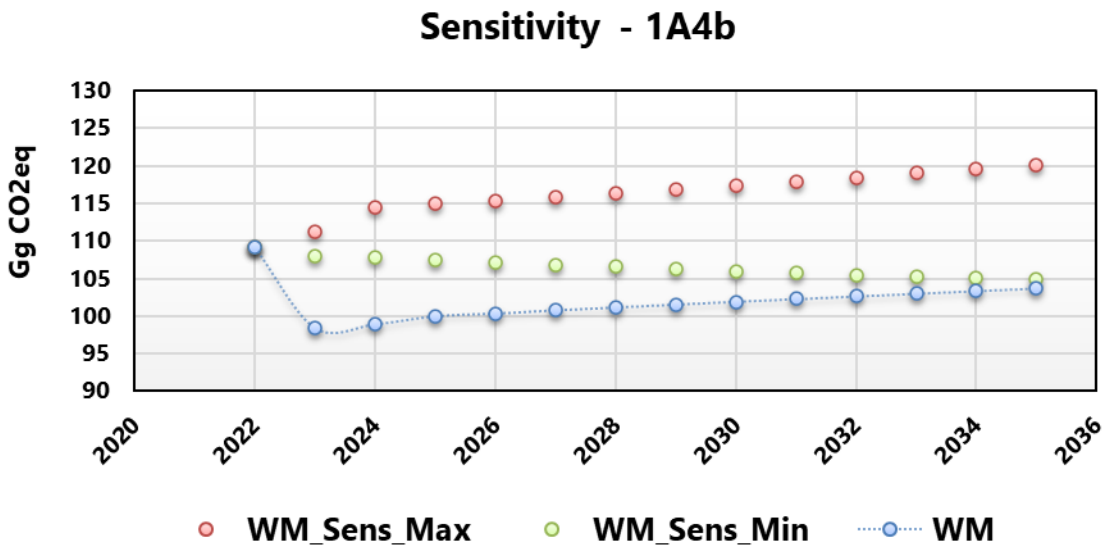


Figure 16. Sensitivity results for the transport sectors civil aviation (1A3a) and road transportation (1A3b).

In other sectors, encompassing residential, commercial/institutional, and agriculture/forestry/fishing, the results obtained in the WM scenario are similar to those obtained with a minimum GDP series by 2035. However, if the expansion of the oil and gas sector contributes to the added value of these sectors, emissions will significantly increase in relative terms (Figure 17). This would necessitate further efforts to mitigate GHG emissions in these sectors.





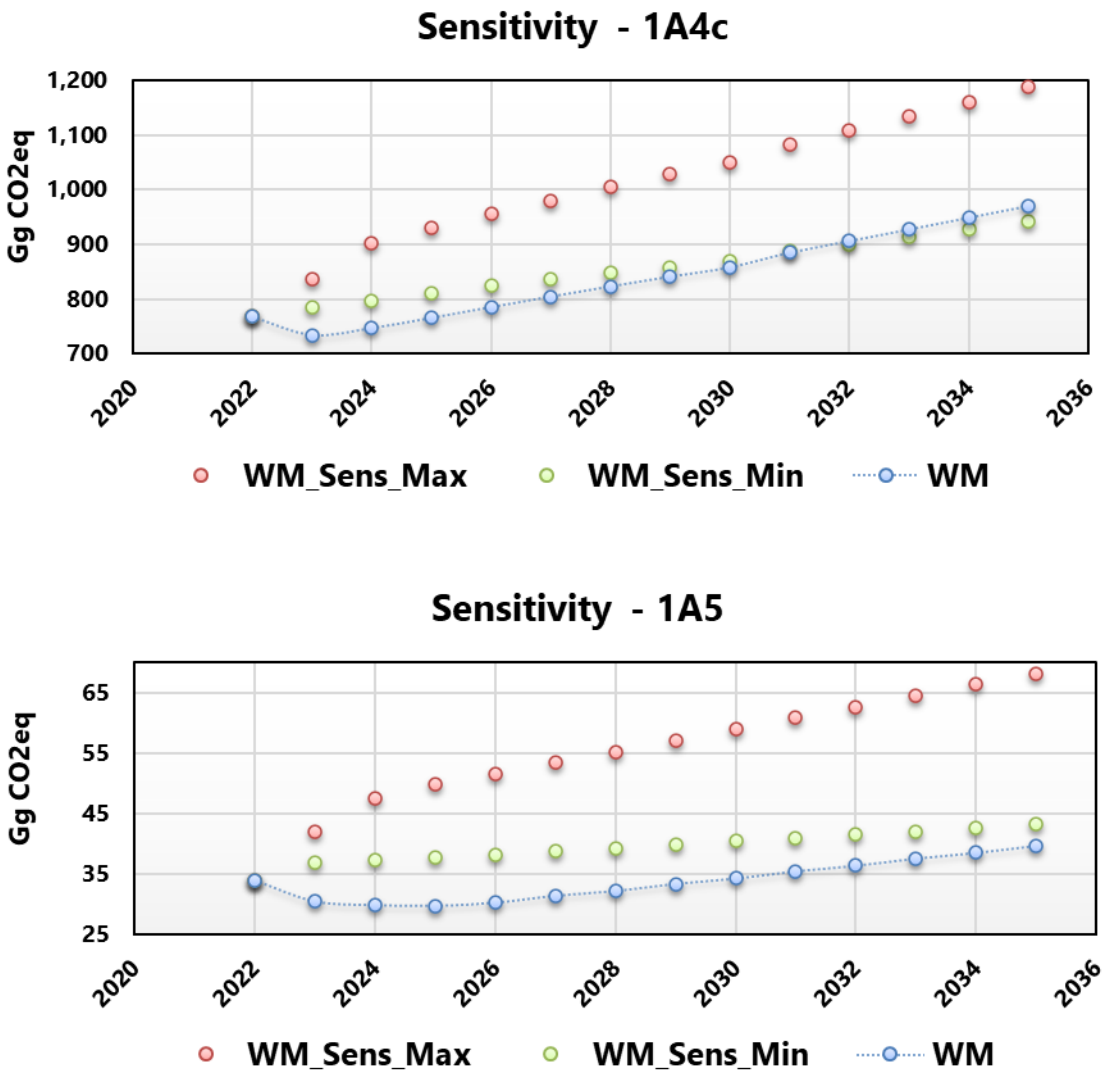


Figure 17. Sensitivity results for other sectors (1A4 & 1A5).

In the case of fugitive emissions, using the maximum GDP will yield the same results as the WM scenario for 2035. This is because the total GDP will follow the same trend as the oil and gas industry in the country, leading to similar emissions. Conversely, an unexpected contraction in these activities would result in significant GHG emission reductions (Figure 18).

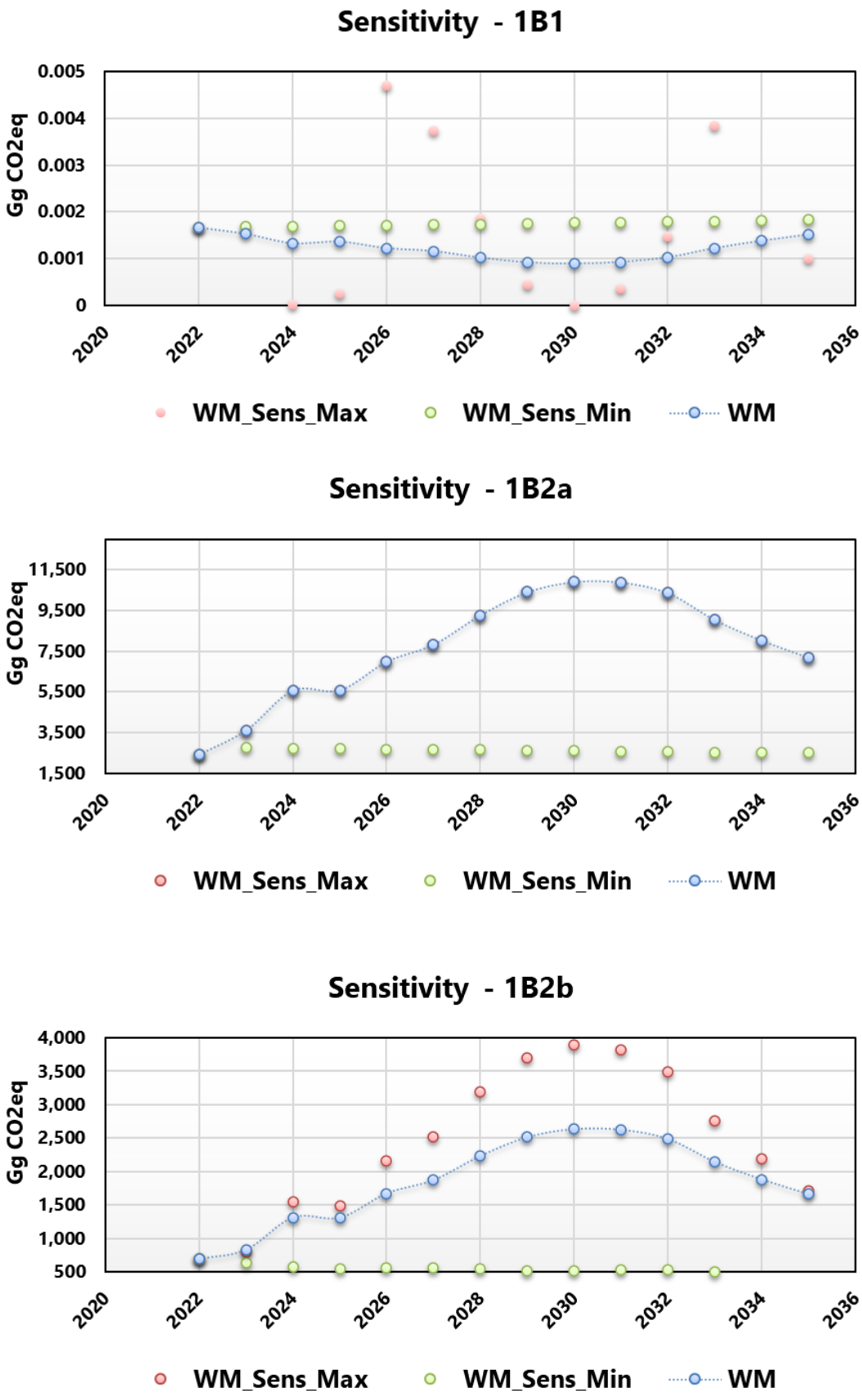
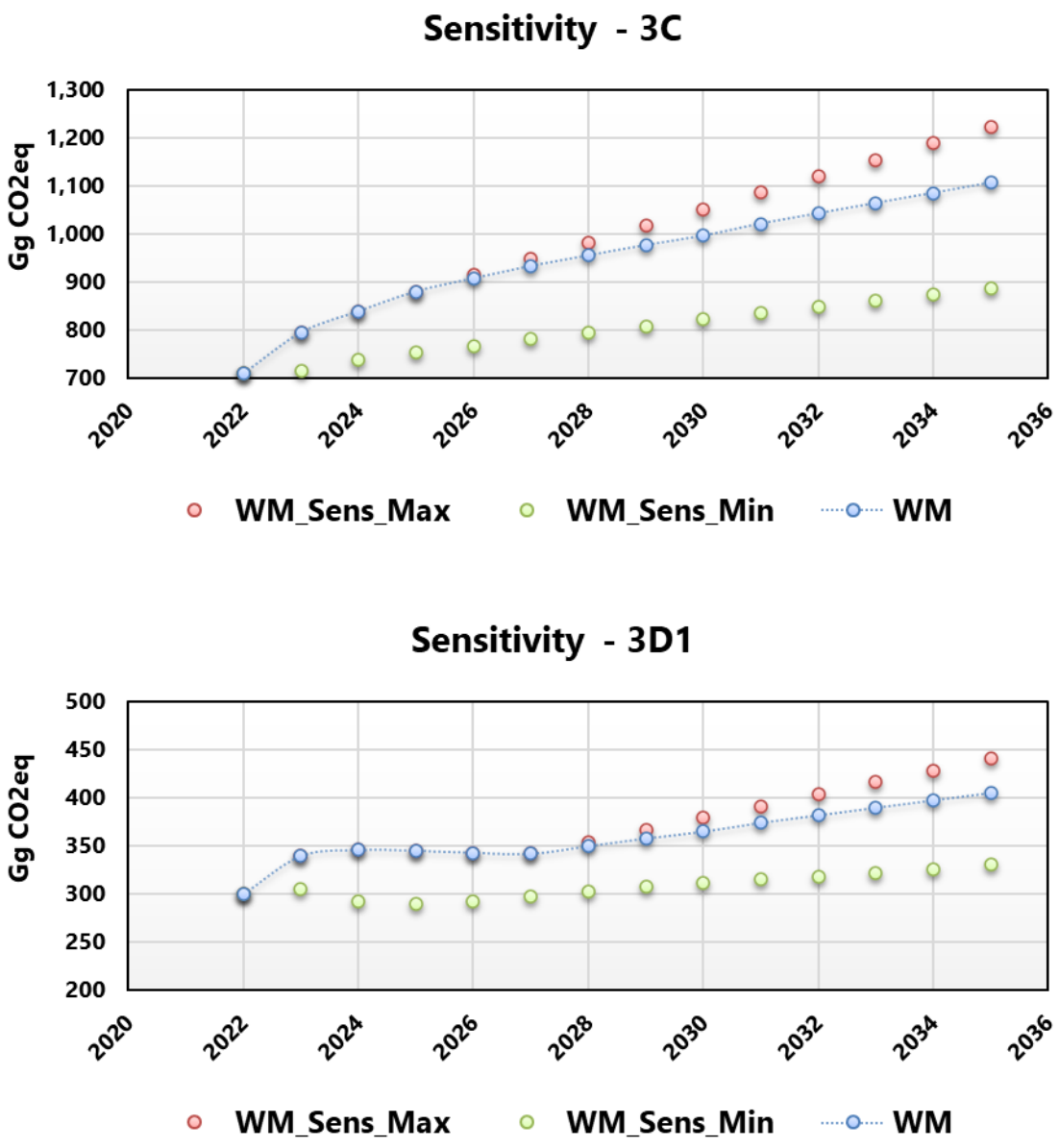


Figure 18. Sensitivity results for fugitive emissions (1B1, 1B2a, and 1B2b).

Regarding the emissions from the agriculture, LULUCF, and waste sectors, these are less affected by GDP levels; thus, the sensitivity analysis did not result in significant GHG emission differences, with notable exceptions. The activity levels in agriculture are expected to grow in the future due to government investments in irrigation and drainage. Increases in these areas will lead to augmented emissions in category 3C (rice cultivation) and category 3D (agricultural soils) (Figure 19).



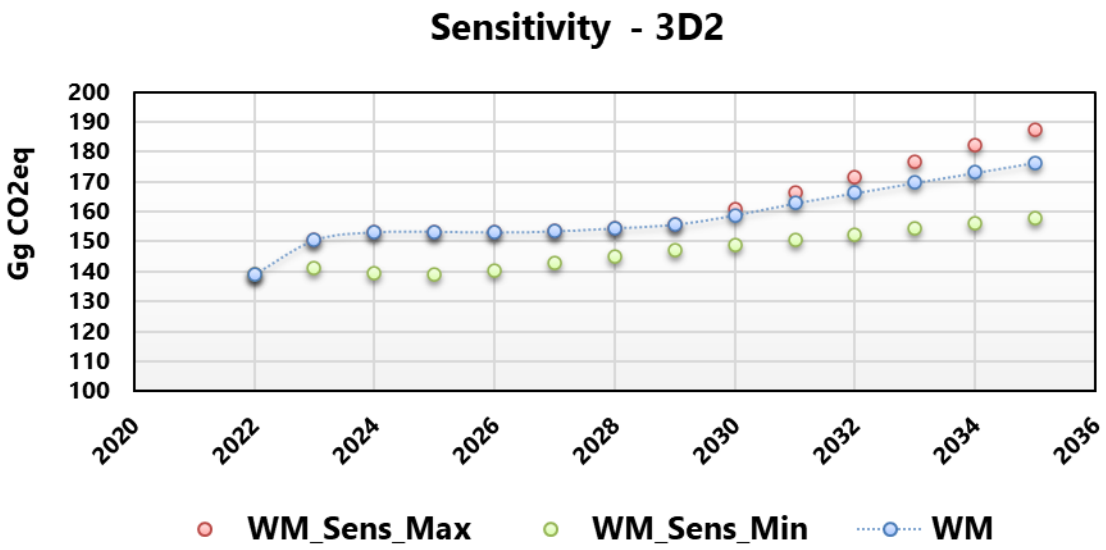
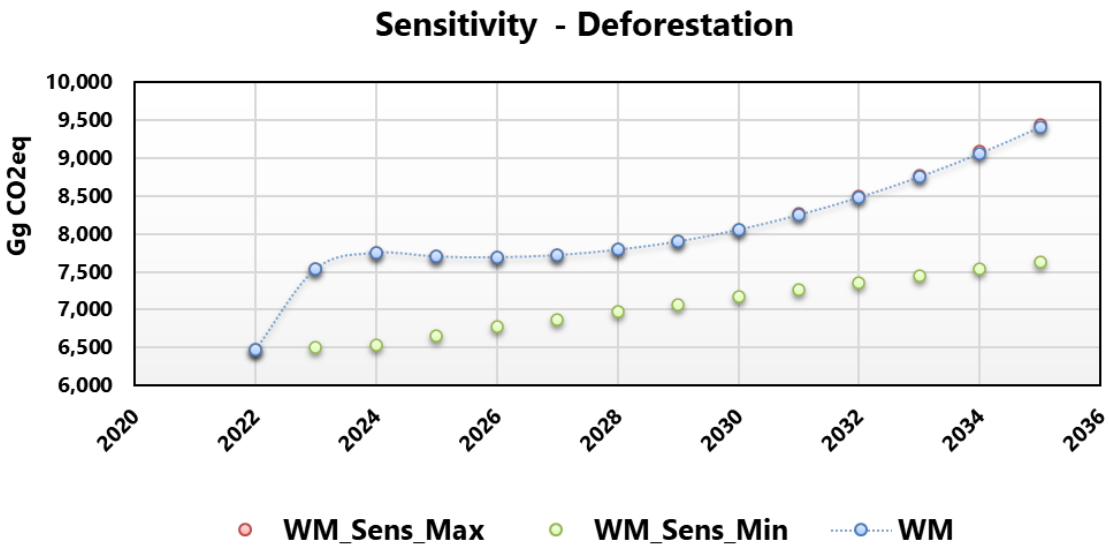


Figure 19. Sensitivity results for the agriculture sector, categories 3C Rice cultivation, and 3D agricultural soils.

The expansion of economic activity would also impact the LULUCF sector, resulting in increased emissions from deforestation and reduced carbon removals from forests, as illustrated in Figure 20.



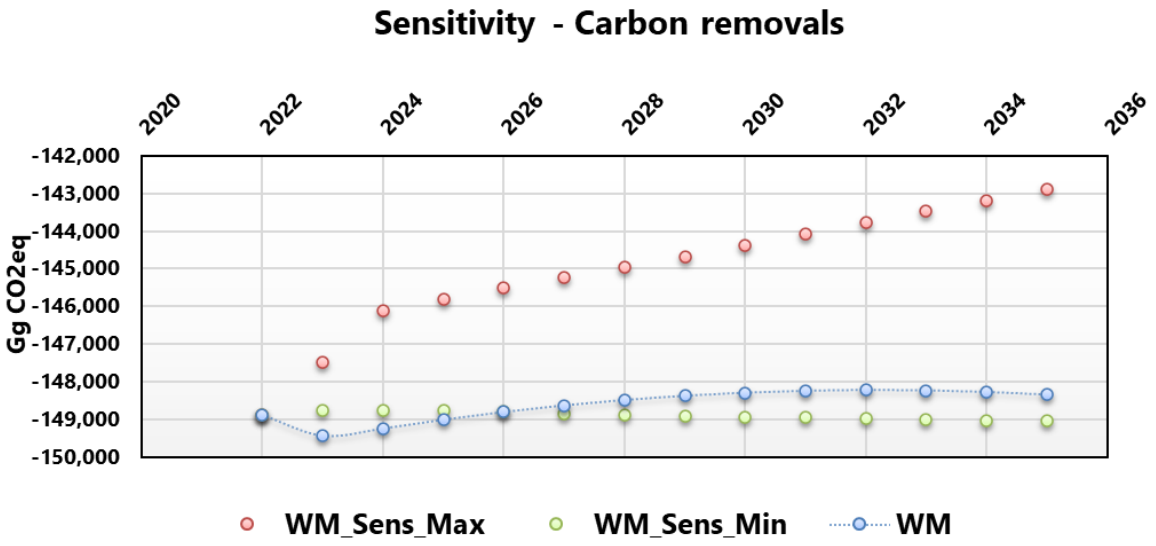


Figure 20. Sensitivity results for the LULUCF sector.

In conclusion, the sensitivity analysis highlights the differential impact of GDP pathways on various sectors. While civil aviation emissions remain largely unaffected by changes in GDP, road transportation exhibits significant sensitivity to economic expansion, underscoring the inelastic demand for land transport. Other sectors, such as residential, commercial/institutional, and agriculture/forestry/fishing, show similar emission levels under the WM scenario and a minimum GDP series by 2035. However, if the oil and gas sector's expansion influences these sectors, emissions will rise considerably, necessitating enhanced mitigation efforts. Fugitive emissions align with the WM scenario under a maximum GDP due to the oil and gas industry's dominant influence. In agriculture, LULUCF, and waste sectors, GDP levels have a minimal effect on emissions, except for anticipated increases in agricultural emissions from government investments in irrigation and drainage. Additionally, economic expansion is likely to elevate emissions from deforestation and reduce carbon removals, highlighting the need for sustainable practices to balance development and environmental conservation. Overall, Guyana remains a predominant net carbon sink in all scenarios.

Annex I | CTFs for NDC Tracking

1. Description of Guyana's NDC

	Description
Target(s) and description, including target type(s), as applicable	In the energy sector: • Expansion of a renewable energy supply of wind, solar, biomass and hydropower. • Reduction of energy consumption and increase of energy efficiency. In the forestry sector: • Continuation and improvement of sustainable forest management. These targets are policy-based including measures to reduce the normative "business-as-usual" growth in emissions.

	Description
Target year(s) or period(s), and whether they are single-year or multi-year target(s), as applicable	Single year target in 2025
Reference point(s), level(s), baseline(s), base year(s) or starting point(s), and their respective value(s), as applicable	2016
Time frame(s) and/or periods for implementation, as applicable	2016-2025
Scope and coverage, including, as relevant, sectors, categories, activities, sources and sinks, pools and gases, as applicable	Scope: National level Coverage: Forestry and energy sectors Gases: Carbon dioxide (CO_2)
Intention to use cooperative approaches that involve the use of ITMOs under Article 6 towards NDCs under Article 4 of the Paris Agreement, as applicable	Guyana intends on pursing engagement in the voluntary and compliance markets guided and in compliance with Articles 4 and 9 of the Paris Agreement. In so doing, Guyana will pursue cooperative approaches that involve the use of ITMOs. Guyana's robust MRV system can ensure the integrity of the emission reduction efforts while engaging with carbon-neutral markets to maximise the value of exports and providing internationally attractive, verifiable low carbon products.
Any updates or clarifications of previously reported information, as applicable	Not applicable

2. Structured summary: Description of selected indicators

Indicator(s) selected to track progress	Description
Energy supply from renewable sources	
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	2016
Updates in accordance with any recalculation of the GHG inventory, as appropriate	No updates have been made. However, if the energy balance is recalculated the indicator will have to be recalculated as well.
Relation to NDC	Increased energy supply from renewable sources will indicate that Guyana is progressing towards the renewable energy target of the NDC.
Energy consumption from fossil sources	
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	2016
Updates in accordance with any recalculation of the GHG inventory, as appropriate	No updates have been made. However, if the energy balance is recalculated the indicator will have to be recalculated as well.
Relation to NDC	A decrease of the total energy consumption from fossil sources will indicate that Guyana is progressing towards the target to reduce energy consumption.
Energy consumption from fossil sources per unit of GDP	
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	2016
Updates in accordance with any recalculation of the GHG inventory, as appropriate	No updates have been made. However, recalculations in the energy balance or the use of more recent constant prices will require updating the indicator.

Indicator(s) selected to track progress	Description
Relation to NDC	A decrease in the energy consumption from fossil sources per unit of GDP means that Guyana is progressing towards the energy efficiency target.
Percentage of staff dedicated to field monitoring sustainable practices in forest management	
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	2016
Updates in accordance with any recalculation of the GHG inventory, as appropriate	No updates have been made. However, if external factors such as policy changes or resource limitations affect staff numbers, then the indicator will need to be updated.
Relation to NDC	The indicator measures the percentage of forestry staff actively involved in field monitoring activities related to sustainable forest management out of the total relevant workforce. This includes overseeing compliance with national and international standards and agreements, including legal timber extraction, sustainable practices, and carbon storage potential.
Number of staff dedicated to field monitoring sustainable practices in forest management	
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	2016
Updates in accordance with any recalculation of the GHG inventory, as appropriate	No updates have been made. However, if external factors such as policy changes or resource limitations affect staff numbers, then the indicator will need to be updated.
Relation to NDC	The indicator measures the number of forestry staff actively involved in field monitoring activities related to sustainable forest management. This includes overseeing compliance with national and international

Indicator(s) selected to track progress	Description
	standards and agreements, including legal timber extraction, sustainable practices, and carbon storage potential.
Share of national territory covered by forest	
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	2016
Updates in accordance with any recalculation of the GHG inventory, as appropriate	No updates have been made. However, if Guyana updates the definition of forest or the definition of when an area is deemed deforested, then the indicator will need to be updated.
Relation to NDC	Stabilisation or an increase in the forest cover in Guyana indicates that the conditional target for the forestry sector is being achieved.

3. Structured summary: Definitions needed to understand NDC

	Definitions
Definition needed to understand each indicator:	**Energy supply from renewable energy sources** Renewable energy sources produce less CO_2 compared to fossil fuels, and increasing their proportion in the national energy supply supports climate change mitigation efforts in Guyana. The indicator includes the renewable energy sources specified in the NDC (wind, solar, biomass, hydropower), but Guyana does not restrict itself to only these sources. The indicator is expressed in terajoules (TJ).
	Energy consumption from fossil sources Energy consumption from fossil sources refers to the total amount of energy that is derived from fossil sources. This indicator measures the quantity of energy consumed that comes from these non-renewable sources. Higher energy consumption from fossil sources generally leads to higher GHG emissions. The indicator is expressed in terajoules (TJ).
	Energy consumption from fossil sources per unit of GDP It measures the amount of energy derived from fossil sources consumed to produce a unit economic output (GDP). This reflects the energy efficiency of an economy in utilising fossil sources. When less fossil sources are used to produce a given amount of economic output this can indicate more efficient use of energy.

	Definitions
	Percentage of staff dedicated to field monitoring sustainable practices in forest management The indicator measures the percentage of forestry staff actively involved in field monitoring activities related to sustainable forest management out of the total relevant workforce. This includes overseeing compliance with national and international standards and agreements, including legal timber extraction, sustainable practices, and carbon storage potential. It assumes that the percentage of staff actively involved in monitoring activities is a reliable proxy for overall forest management effectiveness where an increase in the percentage of staff dedicated to field monitoring directly improves the effectiveness of sustainable forest management practices.
	Number of staff dedicated to field monitoring sustainable practices in forest management This indicator (number of staff) complements the previous indicator to evaluate the overall dedication of Guyana to monitoring of sustainable practices in forest management. It tracks the number of staff assigned specifically to monitor and enforce sustainable forest management practices, which include compliance with national and international standards and agreements, including legal timber extraction, sustainable practices, and carbon storage potential.
	Share of national territory covered by forest Forests absorb carbon dioxide (CO_2) from the atmosphere, acting as carbon sinks. By maintaining or increasing the area of forested land, GHG emissions can be reduced, contributing to climate change mitigation efforts. In Guyana, forest is defined as “Land

	Definitions
	exceeding 1 hectare with trees exceeding 5m in height and 30% crown cover but not classified as agriculture, infrastructure or settlements". An area is deemed deforested once the cover falls and remains below the elected crown cover threshold of 30%, which is guided by the GOFC-GOLD, 2010 definition of "the long-term or permanent conversion of land from forest use to other non-forest uses."
Any sector or category defined differently than in the national inventory report:	**Sector:** Not applicable
	Category: Not applicable
Definition needed to understand mitigation co-benefits of adaptation actions and/or economic diversification plans:	Not applicable
Any other relevant definitions:	Not applicable

4. Structured summary: Methodologies and accounting approaches

Reporting requirement	Description or reference to the relevant section of the BTR
For the first NDC under Article 4:	
Accounting approach, including how it is consistent with Article 4, paragraphs 13–14, of the Paris Agreement	Guyana's accounting approach for its first NDC is grounded in the principles of transparency, accuracy, completeness, comparability, and consistency, as outlined in Article 4, paragraphs 13–14 of the Paris Agreement. The NDC of Guyana is policy-based and includes measures to reduce the normative "business-as-usual" growth in emissions through mitigation targets that focus on factors influencing national GHG trends. The country utilises a sector-specific approach focused on the forestry and energy sectors. For the forestry sector, Guyana adheres to the REDD+ framework, utilising the ART methodology, which ensures that emissions reductions are real, measurable, and verifiable. The accounting is consistent with the national Forest Reference Emission Level (FREL) submitted to the UNFCCC, ensuring that all anthropogenic emissions and removals are captured accurately. In line with Article 4, paragraph 14, Guyana's NDC and its accounting approach are communicated transparently, with all relevant data and methodologies made available to the UNFCCC and the public. The use of international registries, such as the ART TREES Registry, further ensures the integrity and transparency of the accounting process, preventing double counting and maintaining consistency with the principles of the Paris Agreement.
For each NDC under Article 4:	

Reporting requirement	Description or reference to the relevant section of the BTR
Accounting for anthropogenic emissions and removals in accordance with methodologies and common metrics assessed by the IPCC and adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement:	
Each methodology and/or accounting approach used to assess the implementation and achievement of the target(s), as applicable (para. 74(a) of the MPGs)	The accounting approach used in the NDC aligns with the 2006 IPCC Guidelines for National GHG Inventories. In addition, the approach includes the MRV system established under the REDD+ framework. To account for the progress of both the unconditional and conditional non-GHG qualitative targets of Guyana in the energy and forestry sectors, six (6) indicators are used as follows: Energy supply from renewable sources (RES). This indicator is used to track the expansion of renewable energy in energy supply unconditional target. It consists in the energy supply recorded in the energy balance for the country provided by OLADE for the energy commodities considered as renewable, namely firewood, sugarcane and charcoal. The amount of RES from solar, wind and hydropower were not available for this edition of the BTR. The units are Terajoules (TJ). Energy consumption from fossil sources. This indicator is used to track the reduction of energy consumption unconditional target. It consists in the total energy consumption used in the national GHG inventory for

Reporting requirement	Description or reference to the relevant section of the BTR
	estimating the emissions of the energy sector. The data source is the energy balance provided by OLADE. The units are Terajoules (TJ). Energy consumption from fossil sources per unit of GDP. This indicator is used to track the increase of energy efficiency unconditional target. It consists in the total energy consumption used in the national GHG inventory for estimating the emissions of the energy sector, divided by the GDP of the country in millions USD. The data source used for the energy consumption is OLADE, while GDP data has been obtained from the World bank database, as it provides a consistent time series for the NDC implementation period. The metrics of GDP are constant 2015 USD. Percentage of staff dedicated to field monitoring sustainable practices in forest management: Forests absorb carbon dioxide (CO_2) from the atmosphere, acting as carbon sinks. Ensuring sustainable forest management helps in mitigating climate change by maintaining and enhancing carbon stocks through proper forest monitoring and management. The indicator measures the percentage of forestry staff actively involved in field monitoring activities related to sustainable forest management out of the total relevant workforce. This includes overseeing compliance with national and international standards and agreements, including legal timber extraction, sustainable practices, and carbon storage potential. It assumes that the percentage of staff actively involved in monitoring activities is a reliable proxy for overall forest management effectiveness where an increase in the percentage of staff dedicated to

Reporting requirement	Description or reference to the relevant section of the BTR
	field monitoring directly improves the effectiveness of sustainable forest management practices. Number of staff dedicated to field monitoring sustainable practices in forest management: This indicator (number of staff) complements the previous indicator to evaluate the overall dedication of Guyana to monitoring of sustainable practices in forest management. It tracks the number of staff assigned specifically to monitor and enforce sustainable forest management practices, which include compliance with national and international standards and agreements, including legal timber extraction, sustainable practices, and carbon storage potential. Forest cover. This indicator is used to track the conditional target of avoided deforestation. It consists in the percentage of forest land compared to total land. The data source used for this indicator is the GFC who measures the land area covered by forest (ha) and the national land area (which is the total land area of the country, excluding bodies of water (ha)).
Each methodology and/or accounting approach used for the construction of any baseline, to the extent possible (para. 74(b) of the MPGs)	Not applicable.
If the methodology or accounting approach used for the indicator(s) in table 1 differ from those used to assess the implementation and achievement the target, describe each methodology or accounting	Not applicable. The methodology/accounting approach presented in table 2 is the same as the methodology/accounting approach used to assess the implementation and achievement of the target.

Reporting requirement	Description or reference to the relevant section of the BTR
approach used to generate the information generated for each indicator in the tables 4 and 5 (para. 74(c) of the MPGs)	
Any conditions and assumptions relevant to the achievement of the NDC under Article 4, as applicable and available (para. 75(i) of the MPGs)	The achievement of Guyana's NDC is contingent on international support, including financial resources, technology transfer, and capacity-building. It also assumes the continued functionality of the REDD+ framework and related market mechanisms.
Key parameters, assumptions, definitions, data sources and models used, as applicable and available (para. 75(a) of the MPGs)	Key parameters include sustainable forest management, forest cover, renewable energy supply, energy efficiency and energy consumption. Assumptions are based on current and historical deforestation rates and forest cover, and current and historical deployment of renewable energy sources, energy consumption and energy intensity of the country. Data sources include national forestry databases, national energy supply data, and national statistics on energy consumption.
IPCC Guidelines used, as applicable and available (para. 75(b) of the MPGs)	The 2006 IPCC Guidelines for National Greenhouse Gas Inventories are used for the GHG inventory and projections. The activity data of the GHG inventory is also used for the indicators selected to track progress of the NDC targets.
Report the metrics used, as applicable and available (para. 75(c) of the MPGs)	Metrics used include forest area, measured in hectares (ha), energy supply from renewable sources, measured in terajoule (TJ), energy consumption from fossil sources, measured in TJ, energy consumption from fossil sources per unit of GDP, measured in TJ/Million USD, and staff field monitoring sustainable forest management, measured in both % and #.
For Parties whose NDC cannot be accounted for using methodologies covered by IPCC guidelines,	Not applicable.

Reporting requirement	Description or reference to the relevant section of the BTR
provide information on their own methodology used, including for NDCs, pursuant to Article 4, paragraph 6, of the Paris Agreement, if applicable (para. 1(b) of annex II to decision 4/CMA.1)	
Provide information on methodologies used to track progress arising from the implementation of policies and measures, as appropriate (para. 1(d) of annex II to decision 4/CMA.1)	Guyana tracks progress through the national MRV framework, which integrates data on sustainable forest management, forest cover, renewable energy deployment, energy consumption from fossil sources, and energy intensity. This system is consistent with the IPCC Guidelines and supports reporting under the UNFCCC.
Where applicable to its NDC, any sector-, category or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, taking into account any relevant decision under the Convention, as applicable (para. 75(d) of the MPGs)	
For Parties that address emissions and subsequent removals from natural disturbances on managed lands, provide detailed information on the approach used and how it is consistent with relevant IPCC guidance, as appropriate, or indicate the relevant section of the national GHG inventory report containing that information (para. 1(e) of annex II to decision 4/CMA.1, para. 75(d)(i) of the MPGs)	Guyana accounts for natural disturbances using the recommended accounting approaches defined in the IPCC Guidelines for National Greenhouse Gas Inventories. Specific details are provided in the Agriculture, Forestry, and Other Land Use (AFOLU) section of the national GHG inventory report.

Reporting requirement	Description or reference to the relevant section of the BTR
For Parties that account for emissions and removals from harvested wood products, provide detailed information on which IPCC approach has been used to estimate emissions and removals (para. 1(f) of annex II to decision 4/CMA.1, para. 75(d)(ii) of the MPGs)	Emissions and removals from harvested wood products are estimated using the recommended accounting approaches defined in the IPCC Guidelines for National Greenhouse Gas Inventories. Specific details are provided in the AFOLU section of the national GHG inventory report.
For Parties that address the effects of age-class structure in forests, provide detailed information on the approach used and how this is consistent with relevant IPCC guidance, as appropriate (para. 1(g) of annex II to decision 4/CMA.1, para. 75(d)(iii) of the MPGs)	Not applicable.
How the Party has drawn on existing methods and guidance established under the Convention and its related legal instruments, as appropriate, if applicable (para. 1(c) of annex II to decision 4/CMA.1)	Guyana's NDC draws on existing UNFCCC reporting guidelines, including the IPCC Guidelines and REDD+ framework, as well as the GWP published in the IPCC ARs to ensure that national actions align with international standards and contribute to global climate goals.
Any methodologies used to account for mitigation co-benefits of adaptation actions and/or economic diversification plans (para. 75(e) of the MPGs)	Not applicable.
Describe how double counting of net GHG emission reductions has been avoided, including in	Guyana ensures that double counting of GHG emission reductions is avoided through a robust national MRV framework, which conforms to the requirements of the ETF and encompasses all MRV subsystems

Reporting requirement	Description or reference to the relevant section of the BTR
accordance with guidance developed related to Article 6 if relevant (para. 76(d) of the MPGs)	essential for implementing the Paris Agreement. More information on the national MRV framework is provided in Chapter 4 of the BTR.
Any other methodologies related to the NDC under Article 4 (para. 75(h) of the MPGs)	Not applicable.
Ensuring methodological consistency, including on baselines, between the communication and implementation of NDCs (para. 12(b) of the decision 4/CMA.1):	
Explain how consistency has been maintained in scope and coverage, definitions, data sources, metrics, assumptions and methodological approaches including on baselines, between the communication and implementation of NDCs (para. 2(a) of annex II to decision 4/CMA.1)	Consistency has been maintained by applying the same scope, coverage, and definitions at the time of implementation as during the communication. The data sources used include national forestry databases and energy sector data, ensuring continuity in metrics and assumptions. The accounting framework for the forestry sector and energy sector have been consistent throughout the communication and implementation phases. Any updates to methodologies or data sources were transparently communicated to the UNFCCC.
Explain how consistency has been maintained between any GHG data and estimation methodologies used for accounting and the Party's GHG inventory, pursuant to Article 13, paragraph 7(a), of the Paris Agreement, if applicable (para. 2(b) of annex II to decision 4/CMA.1) and explain methodological inconsistencies with the Party's most recent national inventory report, if applicable (para. 76(c) of the MPGs)	GHG emission reductions have not been calculated. However, the activity data (AD) used for the national GHG inventory have also been used for the estimation of the progress of the NDC. Furthermore, any inconsistencies that arose due to updates in methodologies or data collection processes were transparently documented and explained in the relevant sections of the national inventory report, ensuring methodological integrity across reporting mechanisms.

Reporting requirement	Description or reference to the relevant section of the BTR
For Parties that apply technical changes to update reference points, reference levels or projections, the changes should reflect either of the following (para. 2(d) of annex II to decision 4/CMA.1):	
Technical changes related to technical corrections to the Party's inventory (para. 2(d)(i) of annex II to decision 4/CMA.1)	Technical changes related to corrections in Guyana's GHG inventory are detailed in Chapter 2 of the BTR. The BTR presents the GHG inventory for the period 1990-2022, utilising the 2006 IPCC Guidelines for National GHG Inventories (referred to as the 2006 IPCC Guidelines) and the 2019 Refinement to the 2006 IPCC Guidelines for National GHG Inventories (referred to as the 2019 Refinement).
Technical changes related to improvements in accuracy that maintain methodological consistency (para. 2(d)(ii) of annex II to decision 4/CMA.1)	Technical changes related to improvements in accuracy while maintaining methodological consistency in Guyana's GHG inventory are detailed in Chapter 2 of the BTR. The BTR presents the GHG inventory for the period 1990-2022, utilising the 2006 IPCC Guidelines for National GHG Inventories (referred to as the 2006 IPCC Guidelines) and the 2019 Refinement to the 2006 IPCC Guidelines for National GHG Inventories (referred to as the 2019 Refinement).
Explain how any methodological changes and technical updates made during the implementation of their NDC were transparently reported (para. 2(e) of annex II to decision 4/CMA.1)	Methodological changes and technical updates during NDC implementation were transparently reported through official submissions to the UNFCCC. These reports included detailed descriptions of any changes, the rationale behind them, and their implications for the accounting of GHG emissions and removals. This transparency ensured that both national and international stakeholders were informed and that the integrity of the NDC implementation process was maintained.

Reporting requirement	Description or reference to the relevant section of the BTR
Striving to include all categories of anthropogenic emissions or removals in the NDC and, once a source, sink or activity is included, continuing to include it (para. 3 of annex II to decision 4/CMA.1):	
Explain how all categories of anthropogenic emissions and removals corresponding to their NDC were accounted for (para. 3(a) of annex II to decision 4/CMA.1)	The NDC accounted for the forestry and energy sectors, where the majority of the national GHG emissions are produced. The accounting framework was consistent with the IPCC Guidelines.
Explain how Party is striving to include all categories of anthropogenic emissions and removals in its NDC, and, once a source, sink or activity is included, continue to include it (para. 3(b) of annex II to decision 4/CMA.1)	The NDC of Guyana focussed on the key sectors to mitigate emissions, the forestry and energy sectors. The agriculture and waste sectors are also sources of GHG emissions and will in time be part of the NDC of Guyana – however, these sectors are not the major sources of GHG emissions and have therefore not been prioritised. Once a source or sink is included, it remains part of the NDC accounting throughout the implementation period. This approach ensures that all key emissions and removals are consistently monitored and reported, contributing to the accuracy and reliability of Guyana's climate actions.
Provide an explanation of why any categories of anthropogenic emissions or removals are excluded (para. 4 of annex II to decision 4/CMA.1)	The agriculture and waste sectors are also sources of GHG emissions and will in time be part of the NDC of Guyana – however, these sectors are not the major sources of GHG emissions and have therefore not been prioritised.
Each Party that participates in cooperative approaches that involve the use of ITMOs towards an NDC under Article 4, or authorizes the use of mitigation outcomes for	

Reporting requirement	Description or reference to the relevant section of the BTR
international mitigation purposes other than achievement of its NDC	
Provide information on any methodologies associated with any cooperative approaches that involve the use of ITMOs towards an NDC under Article 4 (para. 75(f) of the MPGs)	The methodologies associated with cooperative approaches involving ITMOs are based on the REDD+ framework and ART. These methodologies are designed to ensure that emissions reductions are real, measurable, and verifiable, and that they contribute to Guyana's NDC targets. ITMOs are accounted for in a manner consistent with the principles of environmental integrity, transparency, and the avoidance of double counting, following the relevant decisions under Article 6 of the Paris Agreement.
Provide information on how each cooperative approach promotes sustainable development, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	Cooperative approaches involving ITMOs under Article 6 are aligned with Guyana's sustainable development goals. The methodologies used ensure environmental and social protection are in place, promoting long-term sustainability in line with the objectives of the Paris Agreement.
Provide information on how each cooperative approach ensures environmental integrity consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	Guyana ensures that the cooperative approaches used under Article 6, particularly those involving ITMOs, ensure environmental integrity by adhering to rigorous standards set by the UNFCCC and other relevant bodies. These standards include independent verification of emissions reductions, robust MRV systems, and the alignment with REDD+ methodologies. The integrity of these approaches is further safeguarded by transparent reporting and compliance with international guidelines on emissions accounting and credit issuance.
Provide information on how each cooperative approach ensures transparency, including in	Transparency in cooperative approaches is maintained through regular reporting, public disclosure of emissions data, and adherence to governance standards set by the UNFCCC. This includes the transparent

Reporting requirement	Description or reference to the relevant section of the BTR
governance, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	tracking of ITMOs through registries like the ART TREES Registry and ensuring that all relevant stakeholders are informed about the methodologies, progress, and outcomes of these approaches. The information on methodologies for ITMOs are described in Guyana's initial report and the annual information reported to the UNFCCC: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement/cooperative-implementation/carp-submission-portal/submitted-reports#Initial-and-updated-reports
Provide information on how each cooperative approach applies robust accounting to ensure, inter alia, the avoidance of double counting, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPGs)	Robust accounting in cooperative approaches is achieved through strict adherence to the principles of transparency, accuracy, consistency, and completeness. Guyana uses independent verification, transparent MRV systems, and international registries to track ITMOs and ensure that emissions reductions are not double counted. This approach aligns with the requirements of Article 6, ensuring that all credits used towards NDCs are unique and properly accounted for in both national and international contexts.
Any other information consistent with decisions adopted by the CMA on reporting under Article 6 (para. 77(d)(iii) of the MPGs)	Guyana remains committed to adhering to all relevant decisions adopted by the CMA on reporting under Article 6. This includes compliance with evolving guidelines on the use of ITMOs, continuous improvement of MRV systems, and the transparent reporting of all activities related to cooperative approaches. Any additional information required by the CMA is provided in the relevant sections of national communications and biennial transparency reports.

5. Structured summary: Tracking progress made in implementing and achieving the NDC

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
Indicator(s) selected to track progress of the NDC or portion of NDC under Article 4 of the Paris Agreement (paras. 65 and 77(a) of the MPGs):								
Energy supply from renewable sources	TJ	12,602	12,602	7,864		Greater than 12,602	2025	While some capacity was installed during the period, this indicator still shows a decrease in the total energy supply from renewable sources. This decline is largely due to a significant reduction in sugarcane production in the country. Additionally, the lack of available data on energy supply from solar, wind, and hydropower further contributed to the observed

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
								downward trend as only data on biomass used is available.
Energy consumption from fossil sources	TJ	44,720	44,720	48,391		Less than 44,720	2025	This indicator shows an increase in fossil fuel energy consumption between 2016 and 2022, driven primarily by a substantial 221.2% growth in the national GDP. During this period, fossil fuel consumption rose by 8.2%.
Energy consumption from fossil sources per unit of GDP	TJ/Million USD	10.06	10.06	3.39		Under 10.06	2025	This indicator reflects a significant decrease in the amount of fossil energy consumed per unit of GDP in Guyana, indicating that the country is on track towards achieving its energy efficiency target.
Share of national territory covered by forest	%	85.82	85.82	82.98		85.82	2025	The forest cover level for the year 2022 accounts to 82.98%. However, Guyana continues to maintain low deforestation rates and the carbon market is expected to contribute further to this conditional target.

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
Percentage of staff dedicated to field monitoring sustainable practices in forest management	%	50	50	50		50	2025	The indicator indicates that the percentage of staff conducting field monitoring for sustainable forest management has been consistent throughout the implementation period of the NDC, indicating that the country is on track towards the continuation and improvement of sustainable forest management.
Number of staff dedicated to field monitoring sustainable practices in forest management	#	172	172	194		209	2025	This indicator (number of staff) complements the previous indicator to evaluate the overall dedication of Guyana to monitoring of sustainable practices in forest management.
Where applicable, total GHG emissions and removals consistent with the coverage of the NDC (para. 77(b) of the MPGs)	NA	NA	NA	NA				
Contribution from the LULUCF sector for each year of the target period or target year, if	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
not included in the inventory time series of total net GHG emissions and removals, as applicable (para. 77(c) of the MPGs)								
Each Party that participates in cooperative approaches that involve the use of ITMOs towards an NDC under Article 4 of the Paris Agreement, or authorizes the use of mitigation outcomes for international mitigation purposes other than achievement of the NDC, shall provide (para. 77(d) of the MPGs):								
If applicable, an indicative multi-year emissions trajectory, trajectories or budget for its NDC implementation period	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
(para. 7(a)(i), annex to decision -/CMA.3)								
If applicable, multi-year emissions trajectory, trajectories or budget for its NDC implementation period that is consistent with the NDC (para. 7(b), annex to decision -/CMA.3)	NA	NA	NA	NA				
Annual anthropogenic emissions by sources and removals by sinks covered by its NDC or, where applicable, from the emission or sink categories as identified by the host Party pursuant to paragraph 9 of annex to decision -/CMA.3 (para. 23(a),	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
annex to decision -/CMA.3) (as part of para. 77 (d)(i) information)								
Annual anthropogenic emissions by sources and removals by sinks covered by its NDC or, where applicable, from the portion of its NDC in accordance with paragraph 10, annex to decision -/CMA.3 (para. 23(b), annex to decision -/CMA.3)	NA	NA	NA	NA				
If applicable, annual level of the relevant non-GHG indicator that is being used by the Party to track progress towards the implementation and	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
achievement of its NDC and was selected pursuant to paragraph 65, annex to decision 18/CMA.1 (para. 23(i), annex, decision -/CMA.3)								
Annual quantity of ITMOs first transferred (para. 23(c), annex to decision -/CMA.3) (para. 77(d)(ii) of the MPGs)	NA	NA	NA	NA				
Annual quantity of mitigation outcomes authorized for use for other international mitigation purposes and entities authorized to use such mitigation outcomes, as appropriate (para	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
23(d), annex to decision -/CMA.3) (para. 77(d)(ii) of the MPGs)								
Annual quantity of ITMOs used towards achievement of the NDC (para. 23(e), annex to decision -/CMA.3) (para. 77(d)(ii) of the MPGs)	NA	NA	NA	NA				
Net annual quantity of ITMOs resulting from paras. 23(c)-(e), annex to decision -/CMA.3 (para. 23(f), annex to decision -/CMA.3)	NA	NA	NA	NA				
If applicable, the cumulative amount of ITMOs, divided by the number of elapsed years in the NDC	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
implementation period (para. 7(a)(ii), annex to decision -/CMA.3)								
Total quantitative corresponding adjustments used to calculate the emissions balance referred to in para. 23(k)(i), annex to decision -/CMA.3, in accordance with the Party's method for applying corresponding adjustments consistent with section III.B, annex to decision -/CMA.3 (Application of corresponding adjustments) (para. 23(g), annex to decision -/CMA.3)	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
The cumulative information in respect of the annual information in para. 23(f), annex to decision -/CMA.3, as applicable (para. 23(h), annex to decision -/CMA.3)	NA	NA	NA	NA				
For metrics in tonnes of CO2 eq. or non-GHG, an annual emissions balance consistent with chapter III.B (Application of corresponding adjustment), annex, decision -/CMA.3 (para. 23(k)(i), annex to decision -/CMA.3) (as part of para. 77 (d)(ii) of the MPGs)	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
For metrics in non-GHG, for each non-GHG metric determined by participating Parties, annual adjustments resulting in an annual adjusted indicator, consistent with para. 10 of chapter III.B (Corresponding adjustments), annex to decision -/CMA.3, and future guidance to be adopted by the CMA (para. 23(k)(ii), annex to decision -/CMA.3)	NA	NA	NA	NA				
Any other information consistent with decisions adopted by the CMA on reporting	NA	NA	NA	NA				

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
			Year 1 2016	Current Year 2022	End Year 2025			
under Article 6 (para. 77(d)(iii) of the MPGs)								

*The '*Assessment of the achievement of the Party's NDC under Article 4 of the Paris Agreement*' part of CTF table 4 will be provided at the end of the NDC period.

6. Structured summary: Mitigation PAMs related to implementing and achieving the NDC

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
Guyana Utility Scale Solar Photovoltaic Program (GUYSOL)	The Guyana Utility Scale Solar Photovoltaic Program (GUYSOL) aims to support the diversification of Guyana's energy matrix towards the use of climate-resilient renewable energy sources in the electricity generation matrix. The specific objectives of the program are to: (i) avoid CO_2 emissions with the development of solar photovoltaic (PV) generation plants.	Installation of 8 utility-scale solar PV systems totalling 33MWp of renewable power in 3 public grids as follows: 15MWp of Solar PV with a minimum of 22MWh (11MW, 2h) of battery storage for the Linden Isolated System; 8MWp of Solar PV with a minimum of 12MWh (6MW, 2h) of battery storage for the Essequibo Coast Isolated System; and 10MWp of Solar PV for the Demerara-Berbice Interconnected System, specifically in Berbice.	Regulatory	Adopted	Power Generation	CO_2	2022	Guyana Power and Light Inc. (GPL)	FX	FX
Sustainable Energy Program for Guyana	Promote and support sustainable energy projects in Guyana, in order to contribute to Guyana's energy security, energy access, reduction of fossil-fuel dependence	Increased access to electricity throughout Guyana, targeting 90% of the population, while enhancing the penetration of solar, wind, and small-hydro energy sources.	Regulatory	Adopted	Rural Electrification	CO_2	2013	The Hinterland Electrification Company Inc. (HECI) and Guyana Energy Agency (GEA)	FX	FX

[5] FX – Flexibility. Guyana uses flexibility in light of its capacities with respect to the provision to provide estimates of expected and achieved GHG emission reductions for its actions, policies and measures (para. 85 of the MPGs). The total or annual estimated GHG emission reductions for each PAM reported in Section 4 are, in several instances, derived from desk-based research. Guyana will advance taking steps to estimating GHG emissions (expected and achieved) for each PAM by the time of its second BTR through enhanced data collection and verification procedures and an improved methodological framework for estimating the GHG emission reductions of PAMs.

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
	and provide additional opportunities to reduce GHG emissions.									
Electric Vehicle Supporting Infrastructure	By 2030, Guyana aims to have made significant progress on the transition from a transportation system largely built around petroleum and diesel vehicles, to one which introduces other affordable and competitive transportation options including electric public and private ground transportation.	Reduce supporting infrastructure barriers for EV adoption in Guyana through the construction of 6 public EV charging stations and the introduction of financial incentives to encourage private investment in charging station construction.	Regulatory	Implemented	Transport	CO_2	2019	Guyana Energy Agency (GEA) and Guyana Power and Light Inc. (GPL)	FX	FX
Pilot Rice Husk Biogas Power Plant	This project comprised the installation of a pilot 32kW rice husk biogas generator to displace electricity consumed in rice mill as part of the Guyana Energy Agency´s Strategic Planning Framework starting in 2014.	Installation of a pilot 32kW rice husk biogas power plant to promote waste-to-energy generation in Guyana among rice mill operators.	Regulatory	Implemented	Power Generation	CO_2, CH_4, N_2O	2018	Guyana Energy Agency (GEA)	FX	FX
Leguan 0.6MWp Solar PV Farm	This project aims to install a 0.60 MW solar PV farm with a 0.80 MW storage capacity on a land area of 1 hectare (2.48 acres) and a new transmission line on the island of Leguan located in the Essequibo River in Region 3.	Installation of a 0.6MWp Solar PV farm in the Leguan regional grid, including a transmission distribution system to address current issues with energy reliability while reducing dependence on heavy fuel oil as energy supply.	Regulatory	Planned	Power Generation	CO_2	2023	Guyana Energy Agency (GEA)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
EcoMicro Guyana	The EcoMicro project is a technical assistance facility established to pilot green finance for Micro, Small and Medium Enterprises (MSMEs) across the Caribbean. By partnering with financial institutions (banks, credit unions, cooperatives, etc.) to develop new finance instruments to capitalize on opportunities in green financing, while adjusting their risk management models to climate change risk and incorporating climate impact assessment into their internal policies and operations.	Facilitating access for MSMEs to adopt renewable energy and energy efficiency technologies that complement, reduce the usage of, or substitute unreliable supplies of energy and displace energy from fossil fuels.	Economic	Implemented	Energy Efficiency	CO_2	2018	Institute for Private Enterprise Development (IPED)	FX	FX
Energy Matrix Diversification and Institutional Strengthening of the Department of Energy (EMISDE)	The main objective of the program is to support Guyana's evolving energy sector by: (i) investing in sustainable/cleaner energy solutions to diversify the energy matrix in the Hinterland while contributing to climate change mitigation; (ii) investing in the reinforcement of transmission infrastructure to improve reliability and stability of the Demerara-Berbice.	The project is expected to generate approximately 4,299 MWh of electricity annually (Mahdia – 892 MWh/yr, Lethem – 1,457 MWh/yr, and Bartica – 1,950 MWh/yr) at an average cost (weighted average levelized cost of electricity - LCOE) of US$0.15 per kWh. It will contribute to an estimated 69% reduction in electricity generation cost and an estimated annual cost savings of US$1,932,992 for the hinterland utilities. The addition of renewables to the energy mix will reduce approximately 1,815,015 litres	Regulatory	Adopted	Power Generation	CO_2	2019	Guyana Energy Agency (GEA) Components I and III and Guyana Power & Light Inc (GPL) Component II	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
		of diesel consumption and 3.67 tCO2e per year.								
Expanding Bioenergy Opportunities in Guyana	The general objective of the program is to provide assistance that will allow the Government of Guyana (GOG) to develop the bioenergy sector.	Development of a competitive, integrated agro-energy industry. Reduced CO_2 emissions through the use of bioethanol and biodiesel substituting for gasoline and diesel respectively, cogeneration with bagasse and methane abatement from biofuel wastewater treatment processes.	Regulatory	Implemented	Power Generation	CO_2	2008	Inter-American Development Bank (IDB)	FX	FX
Enhancing Guyana's Access to green Climate Fund (GCF) to Transition to Renewable Energy	Guyana renewable energy market is still at an early stage and power supply remains heavily dependent on imported fuels. To incentivize the deployment of renewable energy the Government is providing tax incentives to ensure that prices for renewables remain competitive with conventional imported resources.	Support the development of potential utility scale renewable energy projects for public-private partnership and Green Climate Fund (GCF) funding.	Economic	Implemented	Power Generation	NA	2019	Global Green Growth Institute (GGGI)	FX	FX
Amaila Falls Hydroelectric Project Preparation Studies	The enabling activity was conducted in preparation for the Amaila Falls Hydro Project. The studies included an (i) Environmental and Social Impact Assessment, (ii) Hydrology Review and (iii) Off-Taker and Market Assessment.	The objective is to assess the feasibility of the hydro project according by analysing the adverse impacts to flora and fauna from the Amaila Falls Hydro Project and provide recommendations regarding monitoring as well as additional data collection or mitigation, if any.	Other	Implemented	Power Generation	NA	2010	Inter-American Development Bank (IDB)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
Wakenaam 0.75MWp Solar Farm	In line with the Low Carbon Development Strategy (LCDS) 2030, this project will install a 750-kilowatt (0.75 MW) solar-powered system in Wakenaam Island which will benefit over 3,500 residents with access to clean and reliable energy and reduce the dependency of diesel for electricity generation.	Generate approximately 1,044 MWh of solar-powered electricity annually.	Regulatory	Adopted	Power Generation	CO_2	2019	Guyana Power and Light Inc. (GPL)	FX	FX
Small Hydropower Project for the Cooperative Republic of Guyana	To increase the share of renewable energy sources within Guyana's electrical generation system, in the context of sustainable energy development, the country is actively rehabilitating old hydropower plants and installing new hydropower plants. The objective of the Project is to provide a reliable and affordable supply of electricity to Lethem and nearby villages by construction of two small hydropower plants.	Rehabilitated Moco-Moco hydropower plant with an installed capacity of 0.7 MW. Installed Kumu hydropower plant with a capacity of 1.5 MW.	Regulatory	Adopted	Power Generation	CO_2	2022	Guyana Energy Agency (GEA)	FX	FX
Hinterland Solar PV Farms	The Guyana Energy Agency has dedicated funding from the national budget to increase utility-scale penetration of solar PV power in Regions 1	Installation of a combined 2.9 MWp utility-scale solar PV capacity to reduce dependency of diesel for electricity generation at the Kawakami	Regulatory	Planned	Power Generation	CO_2	2023	Guyana Energy Agency (GEA)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
	and 10 through the installation and commissioning for the following four solar PV farms. .4MWp Solar PV farm in Kwakawani regional grid, 0.9 MWp Solar PV farm in Port Kaituma regional grid, 0.3MWp Solar PV farm in Matthews Ridge regional grid, and 0.3MWp Solar PV farm in Ituni regional grid.	Port Kaituma, Matthews Ridge, and Ituni regional grids.								
Solar PV Public Buildings Program	The Solar PV public buildings program is a multi-year programme managed by the GEA with public financing from the national budget seeking to enhance the distributed generation capacity of solar-powered electricity by installing grid-connected solar PV systems across public buildings in Guyana.	Develop a self-sustaining and efficient public buildings systems fully run by solar PV to reduce operational costs and associated GHG emissions from energy consumption.	Regulatory	Implemented	Power Generation	CO_2	2014	Guyana Energy Agency (GEA)	FX	FX
Promotion of Private Solar PV Rooftop Systems	Promote the adoption of rooftop gird-connected solar PV technology by private consumers across Guyana to reduce operational costs and associated GHG emissions from energy consumption through a combination of policy and fiscal incentives	Increased share of private consumers installing grid-connected solar PV systems.	Economic	Implemented	Power Generation	CO_2	2020	Guyana Power and Light Inc. (GPL) and private actors	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
	allowing increased distributed generation of solar PV in the country.									
Transitioning to National Energy Security: Bartica as a Model Green Town	Bartica is a small community situated on the Essequibo River, 80 km inland from the Atlantic Ocean. As part of Guyana's pursuance of Green Economy as a development paradigm, the primary objective of this project is to establish a reliable point of reference for the existing state of energy use in Bartica from which the data generated will be used for future measurements and predictions for evidence-based decision making and pursuance of projects and programs. As such, the project aims to increase the capacity of planning for the Government of Guyana by carrying out energy audits and baseline studies in one model town, Bartica.	Reduced energy demand to reduce emissions and energy cost for consumers. Transitioning Bartica from a 100% fossil fuel-based economy to more reliance on clean energy generation.	Other	Adopted	Energy Efficiency	NA	2017	Office of Climate Change (OCC)	FX	FX
Promotion of Energy Efficiency Measures in the Manufacturing	The GMSA energy efficiency project will pilot and promote the adoption of energy efficiency measures in the manufacturing and service	Implementation of the energy efficiency programme in 5 pilot companies. Increase of the energy savings in the 5 pilot companies.	Regulatory	Implemented	Energy Efficiency	CO_2	2011	Guyana Manufacturing & Services Association (GMSA)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
and Service Sectors	sectors in 5 pilot companies, resulting in reductions in energy use and the cost to industry of energy.									
Project for the Introduction of Renewable Energy and Improvement of Power System in Guyana	The objective of the project is to improve the efficiency of the power systems by enhancing the quality of the substation equipment and distribution lines within the City of Georgetown and the surrounding areas. As well as, by installing and demonstrating a solar photovoltaic system and energy management system at the Caribbean Community (CARICOM) Secretariat, thereby contributing to economic development within Guyana.	Enhancing power supply reliability and reducing technical loss by introducing reactive power compensator in the project target areas. Enhancing power supply reliability and reducing technical loss by improving distribution network in the project target areas. Renewable energy is supplied to CARICOM Secretariat main building by introducing PV system with battery. Promote energy saving by introducing BEMS with functions which visualize electricity usage and control air conditioner.	Regulatory	Implemented	Energy Efficiency	CO_2	2018	Guyana Energy Agency (GEA)	FX	FX
Sustainable Business Models for Rural Electrification and Energy Access in Guyana	The Sustainable Business Models for Rural Electrification and Energy Access project aims to increase sustainable, affordable, and reliable access to renewable energy technologies to rural communities in regions 1, 2, 7, 8, and 9 of Guyana.	Facilitation for the implementation of 6,000 solar home systems across 25 hinterland communities with a total capacity of 0.36MW. Electrification of the 80% of rural areas in Guyana that have no electricity.	Regulatory/Economic	Implemented	Rural Electrification	NA	2015	Hinterland Electrification company Inc. (HECI)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
Solar Home Systems	The project, known as the '30,000 solar home systems' project, was designed to balance the energy gap between urban and rural areas, simultaneously propelling the nation towards sustainable, eco-friendly power sources.	Installation of thirty thousand (30,000) 150-watt solar home systems.	Regulatory	Adopted	Rural Electrification	CO_2	2021	Guyana Energy Agency (GEA)	FX	FX
Solar PV Mini-grids	The project includes the installation of 31 solar PV mini-grids with a total capacity of 919kW for public and community buildings. This includes solar PV mini-grids at Sebai, Karaburi, Kwebanna, Haimacabra, Baramita and Canal Bank of Region 1; Wakapao, Capoey Mission, St. Monica and Tapakuma, of Region 2; Waramadong, Paruima and Jawalla of Region 7; Kurukubaru of Region 8; Annai, Karasabai, Aishalton and Kraudarnau of Region 9; and Riversview of Region 10.	The project is expected to generate approximately 1,369.32 MWh of electricity annually. The addition of renewables to the energy mix will reduce GHG emissions.	Regulatory	Adopted	Rural Electrification	CO_2	2021	Guyana Energy Agency (GEA)	FX	FX
Power Utility Upgrade Program	The program aims to improve the efficiency and reliability of Guyana's power system through electricity loss reduction measures, improvements	The program will rehabilitate approximately 830 kilometres or 40% of GPL's distribution network. Installation of 43,838 smart meters throughout the regions.	Regulatory	Implemented	Energy Efficiency, Training and Development	CO_2	2014	Guyana Power and Light Inc. (GPL)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
	in the operational capabilities, and strengthening the management and corporate performance of the country's utility, GPL.									
Sustainable Operation of the Electricity Sector and Improved Quality of Service	As part of the overall objective of the GPL to reduce losses in the Demerara Berbice Interconnected System (DBIS), the project aimed at improving the overall efficiency of GPL's electricity power system. In this context, the general objective of the program is to improve the overall efficiency of the system.	The program's interventions addressed the issue of technical losses by replacing 122.33 km of network, including conductors, transformers and the installation of new meters. Actions to reduce commercial losses included preparing consumer indexes and mapping, increasing the number of legal customers in the rehabilitated Low Voltage network and informing 15,000 customers on the rational use of energy and culture of payment.	Regulatory	Implemented	Energy Efficiency, Training and Development	CO_2	2011	Guyana Power and Light Inc. (GPL)	FX	FX
Power Sector Support Program	The Power Sector Support Programme (PSSP) was established to support the efforts of the Government of Guyana to promote a more sustainable and efficient energy sector. As such, the project included support activities in the electricity sector that will help promote the sustainable development of the energy sector and	Reduction of electricity losses to 25.5%.	Regulatory	Implemented	Energy Efficiency, Training and Development	CO_2	2007	Guyana Power and Light Inc. (GPL)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
	institutionalize policies and programs.									
Strengthening Capacity in Energy Planning and Supervision	In comparison with similar utility organizations, Guyana Power and Light Inc. (GPL) has a limited number of experienced staff and information resources, particularly within system planning and design, network operations, maintenance and system control and engineering services. The objective of this project is to strengthen capacity in the energy sector in Guyana through targeted support on training, technical and strategic planning, coordination, and supervision activities in government agencies.	Establishing efficiently coordinated provision of energy services.	Other	Implemented	Power Generation. Training and Development	NA	2012	Inter-American Development Bank (IDB)	FX	FX
Mabaruma 0.4MWp Solar PV Farm	The Mabaruma Solar Farm was described in the 2017 national budget as the first of several such farms which were to be established under the Hinterland Electrification Programme (HEP). At the time, a budgetary allocation of almost $1 billion was announced to implement a series of renewable energy and energy efficiency projects.	The project is expected to generate approximately 560 MWh of electricity annually and add renewables to the energy mix thereby reducing emissions.	Regulatory	Implemented	Power Generation	CO_2	2017	Hinterland Electrification Company Inc. (HECI)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
	This would include the installation of the first solar farm on a large scale in Mabaruma. When operational, the 400-kilowatt solar farm would afford an additional 17 hours of electricity to the 3,000 residents of Mabaruma.									
Gas to Energy Project	The Gas-to-Energy project is purposed to establish infrastructure so natural gas can be transported from the offshore Stabroek Block's Liza oilfield to an integrated gas processing facility at Wales, on the West Bank of Demerara. The project will deliver natural gas liquids (NGL) and dry gas to the government of Guyana. A subsea pipeline will be installed on the seafloor to transport natural gas from the Liza field to an onshore pipeline at the West Coast of the Demerara river.	The project will provide the fiscal space to cut the cost of power by 50%. Replacing imported heavy fuel oil (HFO) with Guyana's natural gas as the main source of electricity generation will significantly reduce emissions. Through the project, cooking gas and fertiliser will be sold to locals at reduced rates, and sell the remaining NGLs to third parties.	Regulatory	Adopted	Power Generation	CO_2	2023	Ministry of Public Works (MoPW)	FX	FX
Caribbean Renewable Energy Development Programme	This project aims at removing barriers to renewable energy utilisation in the Caribbean. Through specific actions to overcome policy, finance,	Mitigate GHG emissions from the use of fossil fuels in the Caribbean by removing barriers to the utilisation of renewable energy.	Regulatory	Implemented	Power Generation	CO_2	2004	Caribbean Community (CARICOM)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
	capacity, and awareness barriers it is estimated that the contribution of renewable energy sources to the region's energy balance will be significantly increased. At the time, renewable energy provided less than 2% of the region's commercial electricity.									
Moraikobai Micro-grid PV System	The project included the installation of a 72kWp (0.072 MWp) solar micro-grid in Moraikobai which will provide electricity from a renewable energy source to supply approximately 270 households (approximately 1,000 persons). The project will allow an increase in the duration of daily electricity supply from 4 hours to 12 hours.	The project is expected to generate approximately 97.36 MWh of electricity annually and avoid GHG emissions.	Regulatory	Implemented	Rural Electrification	CO_2	2018	Guyana Energy Agency (GEA)	FX	FX
Institutional Strengthening for the Implementation of the LCDS 2030 under REDD+ Partnerships	In July 2022, Guyana adopted the Low Carbon Development Strategy 2030 (LCDS 2030), an update from the original strategy set out in 2009. The LCDS 2030 aims at avoiding deforestation and maintaining forests, while growing the economy five-fold over 10	Enhance national institutional capacity in Guyana to address the impacts of climate change via reduction of deforestation and while demonstrating its ability to earn the maximum portion of funds available via the Guyana REDD+ Investment Fund.	Regulatory	Implemented	Forestry	CO_2	2011	Guyana Forestry Commission (GFC) and Office of Climate Change (OCC	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
	years and keeping energy emissions flat; investing in urban, rural and Amerindian development; protecting the coast and hinterland from climate change; creating jobs in a suite of low carbon sectors; aligning the education and health sectors with low carbon development; and integrating Guyana's economy with its neighbours. The LCDS sets out the following four inter-linked objectives: (i) value ecosystem services; (ii) invest in clean energy and stimulate low carbon growth; (iii) protect against climate change and biodiversity loss; and (iv) align with global climate and biodiversity goals.									
Guyana-EU Forest Law Enforcement, Governance and Trade Voluntary Partnership Agreement	The Guyana-European Union (EU) Forest Law Enforcement, Governance and Trade (FLEGT) Voluntary Partnership Agreement (VPA) supports sustainable forest management, governance, and law enforcement in the trade of sustainable and legal timber products.	Guyana-EU Forest Law Enforcement, Governance and Trade Voluntary Partnership Agreement finalized, in place, and fully operational. Empower Guyana´s forests to forge a green economy based on low levels of deforestation, reduced carbon emissions, and climate resilience.	Regulatory	Adopted	Forestry	CO_2	2012	Guyana Forestry Commission (GFC)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
Guyana REDD+ Monitoring Reporting & Verification System (MRVS)	This activity has designed, implemented, and is currently improving the Monitoring, Reporting and Verification System (MRVS) for the forestry sector in Guyana as a key element to enable the performance-based payments of Guyana's REDD+, and support Guyana´s carbon markets through mechanisms such as ART-TREES. The design of the MRVS comprised three phases, each with a progressively ambitious objective as follows: Phase 1 had the goal to establish the MRVS, Phase 2 had the goal of consolidate and expand capacities for national REDD+ monitoring, and Phase 3 has the goal to maintain an efficiently functioning MRVS that meets international and national requirements and supports natural resources management in Guyana.	A fully operational MRVS system is in place in line with REDD+, UNFCCC, and IPCC standards, with enhanced capacities for inter-institutional multi-dimensional use of its benefits, including access to international carbon markets as a source of sustainable income to fund domestic climate action, as well as to enhance monitoring and enforcement of forest-based activities in the country.	Regulatory	Adopted	Forestry	CO_2	2010	Guyana Forestry Commission (GFC)	FX	FX
Forest Carbon Partnership Facility Project in Guyana	The objective of the technical cooperation assisted Guyana in its efforts to establish an enabling framework and build its capacity for	Full REDD+ readiness status attained in Guyana through extensive stakeholder consultation and participation.	Regulatory	Implemented	Forestry	CO_2	2014	Guyana Forestry Commission (GFC)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
	REDD+ by providing financial and technical assistance aiming to (i) improve the organization of the country for REDD+ Readiness, including stakeholder consultations; and (ii) develop the Guyana REDD+ Strategy to facilitate Guyana's access to additional funding under performance-based incentives.	REDD+ Strategy and Implementation Framework established together with its Environmental and Social Management Framework. All REDD+ activities in Guyana are monitored and reported effectively.								
Securing a Living Amazon through Landscape Connectivity in Southern Guyana	Under the Amazon Sustainable Landscape Impact Program, this project aims to strengthen and improve landscape connectivity through the establishment of conservation areas (800,000 ha) and the management of productive areas (400,000 ha) within southern Guyana as a method to combat degradation, fragmentation, and unsustainable exploitation of forest resources due to unplanned land-use expansion and unsustainable land/water use from logging and mining sectors, new infrastructure (e.g. roads	Strengthened protected area management effectiveness. Increased areas of forests and watersheds brought under sustainable land and water management practices. Strengthened regulatory frameworks for natural resource conservation/sustainable use. Strengthened monitoring, evaluation, and cooperation.	Regulatory	Adopted	Forestry	CO_2	2022	Environmental Protection Agency (EPA) / Protected Areas Commission (PAC)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
	and trails), and wildlife harvesting.									
Amerindian Development Fund	The Amerindian Development Fund (ADF) was established to provide funding to support the low-carbon socio-economic development of Amerindian communities and villages, through the implementation of their Community Development Plans (CDPs) across agriculture, village infrastructure, tourism, manufacturing, village business enterprise, and transportation.	Strengthened entrepreneurial and Institutional capabilities of the village economy of Amerindian communities. Improved linkages with the private sector to further develop value chains. Strengthened institutional framework to support local economies.	Economic	Implemented	Cross-cutting, Hinterland Development	CO_2	2012	Ministry of Amerindian Affairs (MoAA)	FX	FX
Support for Micro and Small Enterprise and Vulnerable Groups' Low-Carbon Livelihoods	The project addressed two of the major bottlenecks that constrained the development of micro and small enterprises (MSEs) and the ability of vulnerable groups to build alternative low-carbon livelihoods in Guyana, namely (i) limited access to finance and (ii) limited technical and business skills.	Support carbon emission reductions by re-orienting the economy onto a low carbon path, through the creation of the necessary incentives and creation of jobs in MSEs under key sectors of Guyana´s Low Carbon Development Strategy 2030.	Economic	Implemented	Cross-cutting, Economic Development	CO_2	2012	Ministry of Business (MoB)	FX	FX
Amerindian Land Titling	Amerindians total approximately 14% of Guyana's population and currently own more than 15.65% of Guyana's	Land titles issued and demarcation process completed for all Amerindian villages that submit requests.	Regulatory	Adopted	Cross-cutting, Hinterland Development	NA	2013	Ministry of Amerindian Affairs (MoAA)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
	territory, up from about 6% in the early 1990s. The Amerindian Land Titling (ALT) project seeks to enable Amerindians to secure their lands and natural resources with an overall goal towards sustainable self-driven socioeconomic development. The ownership of land empowers and allows Guyana's first peoples the liberty to engage in and promote investments towards their own social and economic advancement in a sustainable low-carbon manner.	Increased access to existing and alternative mechanisms for resolving land titling disputes.								
ICT Access and E-services for Hinterland, Remote, and Poor Communities	The objective of the project is to provide the necessary infrastructure, equipment, hardware, and software necessary to enable access to high-quality Information and Communications Technology (ICT) connectivity and accompanying electronic services to 200 Hinterland, Poor, and Remote Communities (HPRCs) across Guyana, as well as to provide capacity	Strengthened e-government policy environment and legislation. Increased broad access to ICT among hinterland, poor, and remote communities. Public e-services and information readily available to HPRCs. Enhanced capacity of HPRCs to use ICT and access e-services.	Regulatory	Adopted	Cross-cutting, Hinterland Development	NA	2017	Office of the Prime Minister (OPM)	FX	FX

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions ($kt\ CO_2\ eq$)[5]	
									Achieved	Expected
	building for communities in the use of newly developed e-services.									
Village Sustainability Plans	Under the Low Carbon Development Strategy 2030 (LCDS 2030), Guyana aims to lead sustainable development at village level with clear strategy in a continuous, predictable, and sustained manner. A dedicated 15% of carbon market revenues in Guyana (under the ART-TREES mechanism) are made available for bottom-up investments in the implementation of community-led low-carbon development programmes for indigenous peoples and local communities (IPLCs) set out in Village Sustainability Plans (VSPs), put together by communities themselves focused on sustainable income generation and socioeconomic upliftment to deliver on climate, energy security, and food security priorities.	Operational benefit-sharing mechanism to direct 15% of carbon market revenues in support of bottom-up investments in the implementation of community-led low-carbon development programmes for indigenous peoples and local communities set out in Village Sustainability Plan.	Regulatory/Economic	Adopted	Hinterland Development	CO_2	2021	Ministry of Amerindian Affairs (MoAA) / National Toshaos Council (NTC)	FX	FX
Strengthened Monitoring, Enforcement	The main driver of deforestation and forest degradation in Guyana is	Strengthened enabling environment for monitoring and enforcement of mining-related environmental	Regulatory	Implemented	Economic Development	NA	2014	Environmental Protection Agency (EPA) /		

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[5]	
									Achieved	Expected
and Uptake of Environmental Regulations in Guyana's Gold Mining Sector	mining, which leads to increased carbon emissions, as the impacts of uncontrolled mining on carbon stocks are believed to be comparable to the degradation of high forest to scrub/savannah, that is, approximately 200 tonnes of carbon per hectare.	regulations and codes of practice. Enhanced capacities for uptake of mining practices that promote conservation.						Guyana Geology and Mines Commission (GGMC)		

7. Structured summary: Information on projections of GHG emissions and removals under a 'with measures' scenario

	Most recent year in the Party's national inventory report (kt CO_2 eq)	Projections of GHG emissions and removals (kt CO_2 eq)		
	2022	2025	2030	2035
Sector				
Energy	4,959.89	8,875.71	15,767.43	11,347.93
Transport	1,156.21	1,158.19	1,318.77	1,495.75
Industrial processes and product use	NE	NE	NE	NE
Agriculture	1,927.02	2,346.49	2,570.05	2,825.54
LULUCF	-142,407.20	-141,304.70	-140,242.77	-138,940.00
Waste	444.94	432.16	436.88	427.73
Other (specify)	NA	NA	NA	NA
Gas				
CO_2 emissions including net CO_2 from LULUCF	-138,550.30	IE	IE	IE
CO_2 emissions excluding net CO_2 from LULUCF	3,904.90	IE	IE	IE
CH_4 emissions including CH_4 from LULUCF	4,065.55	IE	IE	IE
CH_4 emissions excluding CH_4 from LULUCF	4,065.55	IE	IE	IE
N_2O emissions including N_2O from LULUCF	517.61	IE	IE	IE
N_2O emissions excluding N_2O from LULUCF	517.61	IE	IE	IE
HFCs	NE	NE	NE	NE
PFCs	NE	NE	NE	NE
SF_6	NE	NE	NE	NE

	Most recent year in the Party's national inventory report (kt CO_2 eq)	Projections of GHG emissions and removals (kt CO_2 eq)		
	2022	2025	2030	2035
NF_3	NE	NE	NE	NE
Other (specify)	NA	NA	NA	NA
Total with LULUCF	-133,919.14	-128,492.15	-120,149.64	-122,843.04
Total without LULUCF	8,488.06	12,812.55	20,093.13	16,096.96

*NE – Not Estimated. Historical and projected GHG emissions associated with categories within the IPPU sector occurring in Guyana have not been estimated due to data being unavailable.

8. Structured summary: Projections of key indicators

Key indicator	Unit, as applicable	Most recent year in the Party's national inventory report, or the most recent year for which data is available	Projections of key indicators		
		2022	2025	2030	2035
Energy supply from renewable sources	TJ	7,864	NE	NE	NE
Energy consumption from fossil sources	TJ	48,391	NE	NE	NE
Energy consumption from fossil sources per unit of GDP	TJ/Million USD	3.39	NE	NE	NE
Share of national territory covered by forest	%	82.98	NE	NE	NE
Percentage of staff dedicated to field monitoring sustainable practices in forest management	%	50	NE	NE	NE
Number of staff dedicated to field monitoring sustainable practices in forest management	#	194	NE	NE	NE

9. Structured summary: Key underlying assumptions and parameters used for projections

Key underlying assumptions and parameters:	Unit, as applicable	Most recent year in the Party's national inventory report, or the most recent year for which data is available	Projections of key underlying assumptions and parameters		
		2022	2025	2030	2035
GDP w/o oil and gas	G$ Millions	1,427,853	1,537,295	1,750,285	1,963,274
GDP total	G$ Millions	5,214,868	8,199,550	9,800,340	11,401,130
Population	#	775,790	783,066	790,282	800,664
Energy demand	TJ	54,387	76,168	85,552	92,894
Indigenous energy supply	TJ	53,471	56,443	61,419	65,377
Oil production levels	bbl/day average	297,000	617,400	1,344,900	1,178,100
Deforestation	%	0.036	0.060	0.060	0.060
Forest cover	%	82.98	84.56	84.35	84.14

Annex II | Mitigations actions by sector and their effects

1. Energy

Name of Action	Energy Matrix Diversification and Institutional Strengthening of the Department of Energy (EMISDE)					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2019-2024 (Component I) 2019-2026 (Component II)	Guyana Energy Agency (GEA) Components I and III and Guyana Power & Light Inc (GPL) Component II	CO_2	National	Power Generation
Description and Objective						
The main objective of the program is to support Guyana's evolving energy sector by: (i) investing in sustainable/cleaner energy solutions to diversify the energy matrix in the Hinterland while contributing to climate change mitigation; (ii) investing in the reinforcement of transmission infrastructure to improve reliability and stability of the Demerara-Berbice Interconnected System (DBIS); and (iii) strengthening the Department of Energy (DE) to develop a regulatory framework and improve institutional capacity and governance of the Oil and Gas (O&G) sector. The project is structured around three main components. Under component 1 'Renewable Energy Solutions for the Hinterland' of the project, the Government of Guyana, Ministry of Public Infrastructure facilitates the development of grid connected Solar Photovoltaic (PV) systems with a total installed capacity of 3.15 MW to supply the regional grids of the communities of Mahdia (0.65MW), Lethem (1MW), and Bartica (1.5MW). The diversification of the energy matrix and energy security in these three communities aims to promote socioeconomic development through the supply of reliable and affordable electricity to the three communities as well as reduce CO_2 emissions from the power generation sector by utilising a renewable energy source and will support Guyana's evolving energy sector with investment in sustainable and reliable energy solutions along the path to a cleaner and diversified energy matrix, beginning with innovative solutions for energy security and reliability for hinterland townships. The project incorporates a pilot smart metering initiative that is considered an important step forward as it will provide a technological advancement in						

the operation of the distribution grid. Furthermore, the introduction of solar energy presents a great opportunity to implement a women's economic empowerment program at the community level, contributing mainly to the development of productive uses of electricity and community engagement. Under component 2 'Reinforcement of Transmission Infrastructure' of the project, Guyana reinforced the transmission infrastructure to improve the reliability and stability of the Demerara-Berbice Interconnected System (DBIS) in the Kingston-Sophia transmission section with: (i) reinforcements of the new Sophia substation; and (ii) investments in transmission system redundancy. This includes the installation of a reactive compensation system, a Volt-Ampere-Reactive (VAR) at the New Sophia substation, installation of a 69-kV bay or equivalent, construction of an additional transmission line between Kingston and Sophia, and upgrading of the existing transmission line. The conductor under the current configuration is operating almost to its maximum capacity so the new one will provide the grid the possibility to operate at higher amps consequently reducing the risk of trips and outages. This will reduce outages by reducing the level of emergency maintenance and allowing the system to operate under a regular maintenance schedule. The component incorporates the development of standards for the storage and disposal of unused electric equipment in the company, providing a guideline for GPL improvement in management and operation of the substations. Under component 3 'Institutional Strengthening and Governance of the Department of Energy' of the project, it includes consultancies for capacity building initiatives and a best-practice organizational structure; and technical support for the design of a new oil and gas legislative and regulatory framework.

Quantitative Goals

- The project is expected to generate approximately 4,299 MWh of electricity annually (Mahdia – 892 MWh/yr, Lethem – 1,457 MWh/yr, and Bartica – 1,950 MWh/yr) at an average cost (weighted average levelized cost of electricity - LCOE) of US$0.15 per kWh.
- It will contribute to an estimated 69% reduction in electricity generation cost and an estimated annual cost savings of US$1,932,992 for the hinterland utilities.
- The addition of renewables to the energy mix will reduce approximately 1,815,015 litres of diesel consumption and 3.67 tCO_2e per year.
- The project is expected to lead to an improvement of unserved electricity demand.
- It will contribute to a reduced number of outages in the DBIS.
- It will improve the reliability and stability of the DBIS.

Steps Taken or Envisaged to Achieve Action

The GEA within the Ministry of Public Infrastructure (MoPI) is responsible for the execution of the project components I and III and overseeing the provision of the policy support, technical planning, and the development of operating codes and regulations while the Hinterland Electrification Company Inc. (HECI) is in charge of the implementation and operation of projects via local utilities of small grids and solar systems installed in rural areas. Throughout the project implementation, GEA and HECI work in close collaboration due to some overlap in responsibilities. Lethem's solar PV system was completed and fully commissioned on August 5, 2022 while Bartica is was completed by the end of March 2023. The Mahdia solar PV system was scheduled for completion in September 2023. Furthermore, the project involved the installation of 800 AMI compatible smart meters at Bartica, which were completed on 15 December 2022. GPL as the state electricity utility company is responsible for executing component II of the project. Throughout the project implementation, the transmission system of the DBIS has been reinforced and upgraded to attend to the increasing electricity demand estimated over the next years, reach international operating standards by replacing aged and unreliable equipment, integrate new generation sources (such as solar and wind), improve quality of service, and ensure a constant electricity supply that can adapt to variation due to seasonal or daily flows.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Decrease in electricity generation costs. • Avoidance of CO_2 emissions. • Electricity generation in the three townships is diversified. • Renewable energy solutions are introduced. • Incorporation of a smart metering initiative. • Electricity demand is attended. • Reduction of Controlled and Monitored electricity service outages.	3.67 tons CO_2e / yr	The combined annual power generation of 4,299 MWh/yr in the three communities Mahdia, Lethem, and Bartica was multiplied by an emission factor of 0.854 (tons CO_2/MWh) to estimate the annual GHG emission reductions in tons CO_2e per year. Grid emission factors for the Bartica Isolated system of Guyana (tons CO_2/MWh) from report Standardized

• Decrease in voltage fluctuations. • Reinforcement of transmission infrastructure.		baseline: Grid Emission Factors of Guyana Version 01.0, ASB0045-2019

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Price for electricity production per kilowatt hour.	$ USD/kWh	0.50	0.15	0.50
Tons of emissions per year reduced in the townships of Bartica, Mahdia and Lethem.	tons CO_2e/yr	0	3.147	0
Electricity not supplied due to system failures.	MWh	3,591	2,714	5,387.45
Share of electricity produced with Solar PV technology is introduced in the three townships.	%	0	27	2
Women beneficiaries of economic empowerment initiatives.	#	0	200	249
Controlled and monitored electricity service outages.	#/yr	6	1	3
Percentage of voltage variation.	%	5	1.06	4.85
Strengthened Oil and Gas Sector Framework.	#	0	1	1
Procedures for Public Service Announcement (PSA).	#	0	1	1

Name of Action	Expanding Bioenergy Opportunities in Guyana					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling Activity	Completed	2008-2010	Inter-American Development Bank (IDB)	CO_2	National	Power Generation

Description and Objective

The general objective of the program is to provide assistance that will allow the Government of Guyana (GOG) to develop the bioenergy sector. The specific objectives of the program are: (i) improving the capacity of the GOG to identify and evaluate viable investment opportunities in the bioenergy production chain; (ii) develop a financial vehicle or instrument to promote investment opportunities and develop a strategy to harness Guyana's potential for bioenergy production; (iii) increase capacity building and the transfer of technology in order to build a critical mass of bioenergy technicians, operators, and demonstration Programs; and (iv) institutional strengthening to support Agro-energy Policy of Guyana; support for small scale bioenergy demonstration Programs and dissemination of results.

Quantitative Goals

- Development of a competitive, integrated agro-energy industry.
- Reduced CO_2 emissions through the use of bioethanol and biodiesel substituting for gasoline and diesel respectively, cogeneration with bagasse and methane abatement from biofuel wastewater treatment processes.

Steps Taken or Envisaged to Achieve Action

To achieve the objectives of the program it was structured in the following components:

- Component 1 – Development of a methodology for identifying viable investment opportunities, knowledge transfer, and preliminary identification of potential bioenergy programs.
- Component 2 – Design of a financial vehicle or instrument to develop viable investment opportunities and pilot implement a Strategy to promote Guyana's potential for bioenergy production.
- Component 3 – Capacity building and transfer of technology.
- Component 4 – Institutional strengthening to support the Agro-energy Policy of Guyana, support for small-scale bioenergy demonstration projects and dissemination of results.

Achieving these goals will provide Guyana with a platform from which to launch the industry and to support the development and financing of viable investment opportunities.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Lowered costs of sugar production for the development of a competitive, integrated agro-energy industry. • Production of biofuels with the surplus energy sold to the grid. • Reduced CO_2 emissions.	Not Applicable	Not Applicable

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of developed standard methodologies for program screening and evaluation including the design of the basic structure of a bioenergy program-evaluation unit within the Agro-energy Board of Guyana.	#	0	1	1
Number of assessments to determine the requirements to upgrade technical, operative, and managerial skills in relation to bioenergy production.	#	0	1	1

Number of assessments of program developers interested in investing in bioenergy programs in Guyana.	#	0	1	1
Number of designed financial investment instruments appropriate for Guyana including a comparative analysis of proven financial structures.	#	0	1	1
Number of designed sustainable strategies to promote Guyana's potential to attract private investment in bioenergy production.	#	0	1	1
Number of pre-investment studies (pre-feasibility studies, feasibility studies and/or environmental impact assessments) for identified programs.	#	0	5	5
Number of designed and implemented bioenergy training programs at technical, operative, and managerial levels.	#	0	1	1
Number of lectures, field visits, seminars, theoretical and practical courses related to bioenergy production in Guyana.	#	0	4	4
Number of institutions strengthened and support for the preparation and execution of the Agro-energy Policy of Guyana.	#	0	NA	NA
Number of designed, constructed and started demonstration plants for ethanol.	#	0	1	1
Number of conducted works shops or events to disseminate the findings of the program.	#	0	2	2

Name of Action	Enhancing Guyana's Access to GCF to Transition to Renewable Energy					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling Activity	Completed	2019-2020	Global Green Growth Institute (GGGI)	Not Applicable	National	Power Generation

Description and Objective

Guyana renewable energy market is still at an early stage and power supply remains heavily dependent on imported fuels. To incentivize the deployment of renewable energy the Government is providing tax incentives to ensure that prices for renewables remain competitive with conventional imported resources. The objective is to support the development of potential utility scale renewable energy projects for public-private partnership and Green Climate Fund (GCF) funding. To facilitate the implementation of renewable energy projects, and ultimately the Country Programme being developed, potential national accredited entities from the energy sector will be assessed and the nomination by national designated authority (NDA) of two entities will be supported, while raising their awareness on GCF funding opportunities. As key Government partner, the private sector will be engaged in the process of prioritizing utility scale renewable energy projects and made aware of potential access to GCF through Private Sector Facility. Addressing barriers to scale up and make use of the country's abundant natural energy resources would help reduce the cost of power and pave the way for sustainable access to renewable energy.

Quantitative Goals

- Analysis of renewable energy solutions for the 12 main grids in Guyana and provided support to the government of Guyana in shortlisting 3-4 grids to prepare a pre-feasibility analysis of the viable renewable energy options.
- Strengthening of the project Public-Private Partnership (PPP) policy framework adopted by Guyana in 2018 to be able to work on energy projects.
- Provided support by GGGI Guyana to GEA in the design and tender of three PV-tied systems in the township of Bartica, Lethem and Mahdia.
- Support for the nomination of GCF accredited entities, recommendations to strengthen PPP policy to enable energy projects, and recommendations on changes in legislation to enable independent power producers (IPPs).
- Catalysed green investments: total of $10.90 million USD green investments catalysed ($8.6 million USD concessional loan from Inter-American Development Bank and executed by GEA and $2.3 million USD awarded by United Arab Emirates-Caribbean Renewable Energy Fund (UAE-CREF), to provide energy at 15% cheaper than business as usual (BAU).
- Provision of two capacity building activities in the form of GCF capacity building workshop to private sector and technical capacity building for GPL and GEA engineers.

Steps Taken or Envisaged to Achieve Action

The activities under this enabling activity are complementary with each other and builds on deliverables of approved readiness projects under the GCF. Furthermore, it will make use of awareness-raising and information materials developed through completed/ongoing readiness activities to be updated/improved appropriately to fit for use of potential national accredited entities from the energy sector and private sector stakeholders. Moreover, it will benefit from the GCF Accredited Entities Committee to be created under the readiness project being implemented by the Food and Agriculture Organization (FAO) as well as lessons learned from experience so far in supporting national agriculture entities for accreditation.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Developed country program by preparing a pipeline of renewable energy utility scale projects and pre-feasibility analysis for the shortlisted projects and preparing relevant concept notes. • Nominated Direct Access Entities and prepared gap assessment.	Not Applicable	Not Applicable

• Leveraged private sector investment into renewable energy projects: reviewed and recommended changes in regulation and proposal for innovative business models that leverage the private sector investment in renewable energy. • Increased awareness of GCF and its Private Sector Facility.		

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of assessments for the feasibility of selected climate technologies for mitigation and adaptation and incorporated into planning process.	#	0	1	1
Number of NDA entities nominations.	#	1	2	2
Number of concept notes prepared for prioritised utility scale renewable energy projects and integrated in the Country Programme.	#	0	2	2
Number of proposals for levering private sector investments in renewable energy.	#	0	1	1

Name of Action	Guyana Utility Scale Solar Photovoltaic Program (GUYSOL)					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2022-2027	Guyana Power and Light Inc. (GPL)	CO_2	Regions 2, 5, 6, 10	Power Generation

Description and Objective

The Guyana Utility Scale Solar Photovoltaic Program (GUYSOL) aims to support the diversification of Guyana's energy matrix towards the use of climate-resilient renewable energy sources in the electricity generation matrix. The specific objectives of the program are to: (i) avoid CO_2 emissions with the development of solar photovoltaic (PV) generation plants; (ii) lower the cost of electricity generation while supporting the country´s transition towards renewable energy-based generation; and (iii) improve the operation and management of the isolated systems of Essequibo and Linden and develop local skills for services related to solar PV generation systems. The GUYSOL program will install 33MWp of solar PV in 3 public grids: 15MWp in Linden, 8MWp in Essequibo coast and 10MWp in Berbice. The isolated grids in Linden and Essequibo will be upgraded with an Energy Management System. The program also aims to narrow the gender and diversity gaps in the renewable energy industry by implementing training and apprenticeship programs for women and people with disabilities.

Quantitative Goals

- Installation of 8 utility-scale solar PV systems totalling 33MWp of renewable power in 3 public grids as follows: 15MWp of Solar PV with a minimum of 22MWh (11MW, 2h) of battery storage for the Linden Isolated System; 8MWp of Solar PV with a minimum of 12MWh (6MW, 2h) of battery storage for the Essequibo Coast Isolated System; and 10MWp of Solar PV for the Demerara-Berbice Interconnected System, specifically in Berbice.

Steps Taken or Envisaged to Achieve Action

In 2022, the government of Guyana successfully obtained funding for the project through the Guyana-Norway Partnership, channelled through the Interamerican Development Bank (IDB), a planning workshop was held to update and validate the execution plan for the project, and the first request for proposals were developed and published for the execution of the eight solar farms; the preparation for environmental-social-governance analysis, and disaster risks evaluation/planning, and capacity building for GPL. As of mid-2023, the GPL published the first project summary documents, detailing the installation characteristics and socioeconomic and environmental risks and benefits of the project. In August 2023, the Energy Apprentices Programme was launched under the GUYSOL programme, recruiting eligible Guyana residents to fulfil 12-month apprenticeship positions in various roles, including civil engineers, electrical engineers, environmental/social officers, procurement and finance officers, and monitoring officers, contributing to the planning, execution, and operation of the solar projects.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Diversification of local economies and employment creation in renewable energies. • Increased resilience to the volatility of the global fuel market. • Enhanced energy security and affordability through decreased energy costs for local communities and a diversified climate-resilient and market-resilient electricity grid. • Significant reduction in government spending electricity subsidies which can be used for investment in other sustainable development initiatives, including system upgrades, digitisation, reliability, and the resilience of GPL's Transmission and Distribution networks. • Enhanced local technical capacities on renewable energies.	37,500 tons CO_2e / yr	According to the GUYSOL Project Summary Document, Linden is purposed to conserve 17,259 tons CO_2/yr (at 22,500 MWh/yr in power generation), Essequibo to conserve 9,390 tons CO_2e/yr (at 12,800 MWh/yr power generation), and Berbice to conserve 10,671 ton CO_2e/yr (at 16,000 MWh/yr power generation), assuming Berbice´s grid emission factor of approximately 0.661 tons CO_2e/MWh.

Progress Indicators				
Indicator	**Unit**	**Baseline**	**Target**	**Progress**
Number of utility-scale solar PV systems installed and operational.	#	0	8	0
Capacity of solar PV systems installed and operational.	MWp	0	33	0
Number of people with access to enhanced renewable, affordable, and reliable electricity.	#	0	265,000	0
Quantity of annual GHG emissions avoided.	tons CO_2e/yr	0	37.5	0
Avoided cost of power generation by 2027.	$ million USD	0	5.53	0
Proportion of women employed in new solar PV jobs.	%	0	70	0

Name of Action	Pilot Rice Husk Biogas Power Plant					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2018-2021	Guyana Energy Agency (GEA)	CO_2, CH_4, N_2O	Regions 5 and 6	Power Generation

Description and Objective

This project comprised the installation of a pilot 32kW rice husk biogas generator to displace electricity consumed in rice mill as part of the Guyana Energy Agency´s Strategic Planning Framework starting in 2014. Rice husk, the outer most layer of the paddy grain, is a form of biomass and accounts for about 20% of the paddy's weight. Unlike the other by-products, rice husk is mostly seen as a waste disposal problem for many mills and is usually burnt as a form of waste disposal resulting in environmental concerns. In 2014, an estimated 184,052 tonnes of rice husk with an energy value of 212,021 boe was generated based on Guyana's rice production of 635,238 tonnes. Based on information collected in 2013, about 47% of the rice husk is used for paddy drying, parboiling and electricity generation while the remaining 53% is dumped/burnt as a means of waste disposal. The GEA seeks to encourage rice mills to generate electricity based on rice husk gasification technologies to enhance waste management of agricultural by-products, reduce the environmental degradation and GHG emissions, promote energy security, and reduce energy consumption costs among rice mill operators. The pilot demonstration unit seeks to demonstrate the feasibility of the technology, build awareness, and promote adoption by rice mill operators across the country.

Quantitative Goals

- Installation of a pilot 32kW rice husk biogas power plant to promote waste-to-energy generation in Guyana among rice mill operators.

Steps Taken or Envisaged to Achieve Action

In 2014, Guyana completed a comprehensive feasibility study identifying all potential rice husk gasification power plants that can be installed in the country, including a mapping of the location and quantities of biomass available at rice mills across Guyana. In 2018, The Energy and Resources Institute (TERI) provided financial and technical assistance support to successfully install a 32kW gas gasifier serving Regions 5 and 6, which became operational in 2021.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• 32kW rice husk biogas power plant successfully installed and operational. • Increased awareness, capacity, and buy-in among rice mill operators to adopt rice husk gasification technologies for enhanced waste management and low-cost/low-emission energy generation.	101 tons CO_2e/yr	The pilot rice husk biomass power plant is purposed to generate 112 MWh/yr. A combined emission factor of approximately 0.9 tons CO_2e/MWh has been assumed to reflect the GHG reductions encompassing both the open-burning of rice husk, as well as the use of grid electricity from Regions 5&6, that has now been replaced from the self-generation of electricity at the rice husk biomass power plant.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Progress in feasibility study completion.	%	0%	100%	100%
Number of pilot rice husk biomass power plants installed.	3	0	1	1
Installed capacity of rice husk biomass energy generation.	kW	0	20-30	32

Name of Action	Leguan 0.6MWp Solar PV Farm					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Planned	2023-2025	Guyana Energy Agency (GEA)	CO_2	Region 3	Power Generation

Description and Objective

This project aims to install a 0.60 MW solar PV farm with a 0.80 MW storage capacity on a land area of 1 hectare (2.48 acres) and a new transmission line on the island of Leguan located in the Essequibo River in Region 3. The project aims to address the island's current deficiencies in terms of energy reliability by expanding the installed capacity of energy generation on the island, while also promoting clean energy use through the diversification of the electricity grid away from fossil fuels. Currently, Leguan tends to have issues related to the unreliability of power supply, whereby electricity is provided on a 24-hour basis by an isolated 1.23 MW grid relying on heavy fuel oil (HFO), owned and operated by the state electricity provider, GPL. In the medium term, GPL plans to link the Leguan grid to those of nearby islands using a subsea cable. At a design life of 20 years, the solar PV farm is expected to save more than 840 tons CO_2e/yr.

Quantitative Goals

- Installation of a 0.6MWp Solar PV farm in the Leguan regional grid, including a transmission distribution system to address current issues with energy reliability while reducing dependence on heavy fuel oil as energy supply.

Steps Taken or Envisaged to Achieve Action

In 2018, Guyana secured a $21 million USD concessional loan from the Inter-American Development Bank (IDB) for the project "Energy Matrix Diversification and Institutional Strengthening of the Department of Energy (EMISDE)", which encompassed the installation of renewable energy generation and enhanced transmission infrastructure, together with institutional strengthening, under which a total of $1.2 million USD was saved under the EMISDE. While the Leguan 0.6MWp Solar PV farm was not initially catered for under the loan, it is being funded through savings accrued under the EMISDE programme, as well as an additional concessional loan requested by the Government of Guyana and approved by the IDB. As of mid-2023, the GEA has initiated the tendering process for the environmental assessment and management plan for the solar PV power plant at Leguan, as well as the engineering, procurement, construction and installation, commissioning and turn-key delivery for the solar PV power plant at Leguan, including the battery energy storage system & transmission line. It is estimated that the solar PV farm will be operational starting 2025.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Increased energy reliability. • Reduced dependence on heavy fuel oil for electricity generation. • Enhanced transmission infrastructure. • Reduced CO_2 emissions.	841 tons CO_2e/yr	The Leguan Solar PV farm is purposed to generate 899 MWh/yr. An emission factor of 0.936 tons CO_2e/MWh has been assumed to reflect the GHG reductions attained by the use of solar energy compared to the consumption of the same amount of energy generated by conventional heavy fuel oil historically used at Leguan to date.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Quantity of GHG emissions reduced at Leguan.	tons CO_2e/yr	0	899	0
Capacity of solar PV infrastructure installed and operational at Leguan.	MW	0	60	0
Number of environmental assessments for plant design and permitting.	#	0	1	1

Name of Action	Amaila Falls Hydroelectric Project Preparation Studies					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling Activity	Completed	2010-2011	Inter-American Development Bank (IDB)	Not Applicable	Regions 3, 4, 5, 6, 10	Power Generation

Description and Objective

The enabling activity was conducted in preparation for the Amaila Falls Hydro Project. The studies included an (i) Environmental and Social Impact Assessment, (ii) Hydrology Review and (iii) Off-Taker and Market Assessment. The objective is to assess the feasibility of the hydro project according by analysing the adverse impacts to flora and fauna from the Amaila Falls Hydro Project and provide recommendations regarding monitoring as well as additional data collection or mitigation, if any.

Quantitative Goals

- Wet season Environmental Baseline Survey (ESB I)
- Dry season Environmental Baseline Survey (ESB II)

Steps Taken or Envisaged to Achieve Action

The Amalia Falls Hydro Project was approved by the Guyana Environmental Protection Agency (EPA) based on the Amaila Hydropower Project Environmental Impact Assessment (EIA) completed in 2002. However, additional environmental and social studies have been performed to assist in the final pre-construction planning process and to provide updated information on the environmental and social aspects. The primary objective of ESB I in April/May 2010 was to characterise flora and fauna of the project area during the dry season. However, conditions at the time of ESB I were more characteristic of a wet season than a dry season and therefore a complementary survey (ESB II) was undertaken during the dry season in March/April 2011.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Quantitative and qualitative information regarding characteristics of the flora and fauna communities in the area.	Not Applicable	Not Applicable

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Implementation of a flora and fauna study.	#	0	1	2

Name of Action	Wakenaam 0.75MWp Solar Farm					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2019-Ongoing	Guyana Power and Light Inc. (GPL)	CO_2	Region 3	Power Generation

Description and Objective

In line with the Low Carbon Development Strategy (LCDS) 2030, this project will install a 750-kilowatt (0.75 MW) solar-powered system in Wakenaam Island which will benefit over 3,500 residents with access to clean and reliable energy and reduce the dependency of diesel for electricity generation. This development forms part of a macro plan to develop the island with the necessary infrastructure for it to lead in food production, and ultimately, bring economic prosperity to the people.

Quantitative Goals

- Generate approximately 1,044 MWh of solar-powered electricity annually.
- The addition of renewables to the energy mix will reduce approximately 5,919.57 tons CO_2e per year.

Steps Taken or Envisaged to Achieve Action

Once the solar-powered system is fully operational, it will improve the quality of life of the farming community located on Wakenaam Island.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Provision of affordable, stable, and reliable energy to benefit both households and businesses. • Decrease in electricity generation costs. • Avoidance of CO_2 emissions. • Renewable energy solutions are introduced.	940 tons CO_2e /yr	The annual power generation of 1,044 MWh/yr is multiplied by an emission factor of 0.901 tons CO_2/MWh to estimate the annual GHG emission reductions. Grid emission factors for the Wakenaam Isolated system of Guyana (tons CO_2/MWh) from report Standardized baseline: Grid Emission Factors of Guyana Version 01.0, ASB0045-2019

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Emissions per year reduced in Wakenaam Island.	tCO_2e/yr	0	5,919.57	5,919.57
Installation of solar-powered system.	#	0	1	1

Name of Action	Small Hydropower Project for the Cooperative Republic of Guyana					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2022-Ongoing	Guyana Energy Agency (GEA)	CO_2	Region 9	Power Generation

Description and Objective

To increase the share of renewable energy sources within Guyana's electrical generation system, in the context of sustainable energy development, the country is actively rehabilitating old hydropower plants and installing new hydropower plants. The objective of the Project is to provide a reliable and affordable supply of electricity to Lethem and nearby villages by construction of two small hydropower plants. The main components of the project include the construction of a new 1.5MW Kumu hydropower plant and the rehabilitation and upgrade of the defunct Moco Moco hydropower plant to 0.7MW capacity. The Moco-Moco 0.5 MW (2 x 0.25 MW) hydropower project, Region 9, was commissioned on November 22, 1999. The Moco-Moco hydropower station is a run-of-the-river, diversion-type with a high water head. The Moco-Moco hydropower plant supplied power to the community of Lethem and its environs. Severe rainstorms and subsequent landslide on July 5, 2003 resulted in a fractured penstock. This project aims to rehabilitate the defunct hydropower plant and increase the installed capacity to 0.7 MW. The project will provide electricity from an indigenous and renewable energy source to serve the demand of Lethem and its environs. This project forms a complementary suite of planned energy initiatives in the town, consisting of a hydropower plant and a solar PV farm. The proposed Kumu hydropower project entails the installation of a 1.5 MW hydropower plant and construction of a transmission line. The Kumu Creek, located in Region 9 (Upper Takutu-Upper Essequibo), is also part of the Amazon River System. The Kumu Hydropower Project will operate as a run-of-the-river type plant and its topographical specifications can accommodate the construction of a small reservoir on the top of the mountain plateau so as to maintain a constant water level for operation of the plant. The project will provide electricity from an indigenous and renewable energy source to serve the demand of Lethem and its environs.

Quantitative Goals

- Rehabilitated Moco-Moco hydropower plant with an installed capacity of 0.7 MW.
- Installed Kumu hydropower plant with a capacity of 1.5 MW.

Steps Taken or Envisaged to Achieve Action

The Kumu hydropower plant and the Moco Moco hydropower station will be a strong, reliable, and redundant power supplier and controller for existing and future demand. The combined operation of the Kumu and Moco Moco hydropower systems, together with the planned solar PV, can result in 100% of renewable energy generation in the power sector of Lethem.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• 100% of renewable energy generation in the power sector of Lethem. • Decrease in electricity generation costs. • Avoidance of CO_2 emissions.	12,344 tons CO_2e / yr	The total capacity is 2.2 MW. The annual power generation of 14,454 MWh/yr is multiplied by an emission factor of 0.854 tons CO_2/MWh to estimate the annual GHG emission reductions. Grid emission factors for the Bartica Isolated system of Guyana (tons CO_2/MWh) from report Standardized baseline: Grid Emission Factors of Guyana Version 01.0, ASB0045-2019

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Installed capacity of Moco-Moco hydropower plant.	MW	0.5	0.7	NA

Functional Kumu hydropower plant.	#	0	1	NA
Installed capacity of Kumu hydropower plant.	MW	0	1.5	NA

Name of Action	Hinterland Solar PV Farms					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Planned	2023-2025	Guyana Energy Agency (GEA)	CO_2	Regions 1 and 10	Power Generation

Description and Objective

The Guyana Energy Agency has dedicated funding from the national budget to increase utility-scale penetration of solar PV power in Regions 1 and 10 through the installation and commissioning for the following four solar PV farms: 1.4MWp Solar PV farm in Kwakawani regional grid, 0.9 MWp Solar PV farm in Port Kaituma regional grid, 0.3MWp Solar PV farm in Matthews Ridge regional grid, and 0.3MWp Solar PV farm in Ituni regional grid. The objective is to increase the national grid capacity to supply increasing energy demands through the electrification transition, whilst reducing GHG emissions and electricity costs from the current diesel-dependent regional grids.

Quantitative Goals

- Installation of a combined 2.9 MWp utility-scale solar PV capacity to reduce dependency of diesel for electricity generation at the Kawakami Port Kaituma, Matthews Ridge, and Ituni regional gids.

Steps Taken or Envisaged to Achieve Action

As of early 2023, the Guyana Energy Agency launched request for proposal for consultancy services for the preparation of detailed site investigation reports for the envisioned Kawakami, Port Kaituma, Mathews Ridge, and Ituni sites. The site investigation reports encompass drone imaging, topographic and geotechnical studies, as well as environmental impact assessments as part of the standard process to obtain authorization protocols by Guyana's Environmental Protection Agency. Once the projects have received authorization, work will begin on procurement and installations aiming to have these four solar PV sites fully commissioned and operational by mid-2025.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Provision of affordable, stable, and reliable energy to benefit both households and businesses. • Decrease in electricity generation costs. • Avoidance of CO_2 emissions. • Renewable energy solutions are introduced to decrease dependence on fossil fuels as well as vulnerability to fossil fuel market instabilities	3,046 tons CO_2e / yr	The Kwakawani, Port Kaituma, Mattews Ridge, and Ituni solar PV farms are purposed respectively to generate 1,754 MWh/yr, 1135 MWh/yr, 307 MWh/yr, and 371 MWh/yr for a combined total of 3,567 MWh/yr. An emission factor of 0.854 tons CO_2e /MWh has been adopted to reflect the GHG reductions assuming this PV energy would replace current diesel-run generators.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Installed capacity of utility-scale solar PV systems in Regions 1 and 10.	MWp	0	2.9	0
Number of utility-scale solar PV systems installed in Regions 1 and 10.	#	0	4	0
Annual quantity of renewable energy generated in Regions 1 and 10.	MWh/yr	0	3,567	0

Name of Action	Solar PV Public Buildings Program					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2014-2022	Guyana Energy Agency (GEA)	CO_2	National	Power Generation

Description and Objective

The Solar PV public buildings program is a multi-year programme managed by the GEA with public financing from the national budget seeking to enhance the distributed generation capacity of solar-powered electricity by installing grid-connected solar PV systems across public buildings in Guyana spanning schools, healthcare facilities, convention centres, libraries, radio stations, and government offices, as well as other government and public service buildings. The ultimate goal is to increase the diversification and reliability of the national electric grid while promoting by example the adoption of solar PV technology.

Quantitative Goals

- Develop a self-sustaining and efficient public buildings systems fully run by solar PV to reduce operational costs and associated GHG emissions from energy consumption.

Steps Taken or Envisaged to Achieve Action

Between 2014 and 2022, the Guyana Energy Agency has installed a over 6.3 MWp of rooftop solar PV systems in over 409 public buildings distributed across the country, spanning schools, healthcare facilities, radio stations, libraries, exhibition centres, and government buildings, among others, resulting. A total of 291 public buildings now completely run on solar PV power and result in an estimated $2.3 million USD energy savings each year. The GEA also assisted in upgrading and completing the electrical network infrastructure at some of these public buildings, along with installing outlets and energy-efficient LED lights to improve the lighting system of the buildings. Additionally, the GEA provided training on the operation and basic maintenance of the installed Solar PV Systems, to ensure their adequate operation and to build awareness and encourage uptake by their users.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Reduced operational costs for public buildings related to energy consumption. • Enhanced access reliable, on-site, clean electricity. • Promoting adoption of solar PV technology by leading by example from government operations. • Enhanced awareness and capacities among building users on solar PV technologies. • Reduced dependence on fossil fuels for energy purposes.	5,518 tons CO_2e / yr	It is assumed that the installed capacity of solar PV systems at public buildings would generate a cumulative 8,348 MWh/yr. Assuming an average emission factor for the national grid of Guyana of 0.661 tons CO_2e/MWh, the energy produced by these systems would prevent the generation of 5,518 tons CO_2 each year.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of public buildings with solar PV systems.	#	0	Not Estimated	409
Installed capacity of solar PV systems in public buildings.	MWp	0	Not Estimated	6.35
Annual savings in energy bills at public buildings from onsite solar PV generation.	$ USD / yr	0	Not Estimated	2.3 million
Annual GHG reductions at public buildings from onsite solar PV generation.	tons CO_2e	0	Not Estimated	5,518

Name of Action	Promotion of Private Solar PV Rooftop Systems					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2020-2022	Guyana Power and Light Inc. (GPL) and private actors	CO_2	National	Power Generation

Description and Objective

Promote the adoption of rooftop gird-connected solar PV technology by private consumers across Guyana to reduce operational costs and associated GHG emissions from energy consumption through a combination of policy and fiscal incentives allowing increased distributed generation of solar PV in the country.

Quantitative Goals

- Increased share of private consumers installing grid-connected solar PV systems.

Steps Taken or Envisaged to Achieve Action

Along with investments in transformational infrastructure, Government policy is to encourage individual consumers and businesses to invest in, and use, renewable energy through fiscal incentives and policies. The GPL has reported that by 2022, the total registered installed capacity of solar PV systems from private sources sums to 1.4 MWp. These have been made possible thanks to the following policies:

- Self-Generation: Private self-generation is allowed as per Guyana's legislation. Any consumer who wishes to interconnect their solar PV system into the public grids to eliminate the need for battery storage (solar PV on-grid) must submit an interconnection request and comply with the Interim Interconnection Requirements set by GPL.
- Grid Feed-In Mechanism: A grid feed-in mechanism is being advanced by GPL to establish the regulatory framework for consumers to supply excess energy to the grid, from renewable energy sources.
- Fiscal Incentives: Machinery and equipment imported for the purposes of generating and utilising renewable energy are eligible for Customs duty and Value-Added Tax Exemptions under existing laws. This includes solar panels, solar lamps, deep-cycle batteries, solar generators, solar water heaters, solar cookers, direct current (DC) solar refrigerators, DC solar freezers, DC solar air-conditioners, wind turbines, water turbines, and power inverters; and energy-efficient lighting, including compact fluorescent lamps and light-emitting diode (LED) lamps. There is also a one-off tax holiday of two years for corporation tax to importers of items for wind and solar energy investments.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Reduced operational costs for private buildings related to energy consumption. • Enhanced access reliable, on-site, clean electricity. • Promoting adoption of solar PV technology by demonstrating the technical and financial feasibility of solar PV technology adoption. • Enhanced awareness and capacities among building users on solar PV technologies. • Reduced dependence on fossil fuels for energy purposes.	1,431 tons CO_2e / yr	It is assumed that the installed capacity of private solar PV systems at public buildings would generate a cumulative 2,164 MWh/yr. Assuming an average emission factor for the national grid of Guyana of 0.661 tons CO_2e/MWh, the energy produced by these systems would prevent the generation of 1,431 tons CO_2 each year.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Installed capacity of solar PV systems in public buildings.	MWp	0	Not Estimated	1.40
Annual GHG reductions at public buildings from onsite solar PV generation.	tons CO_2e	0	Not Estimated	1,431

Name of Action	Mabaruma 0.4MWp Solar PV Farm					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2017-2020	Hinterland Electrification Company Inc. (HECI)	CO_2	Region 1	Power Generation

Description and Objective

The Mabaruma Solar Farm was described in the 2017 national budget as the first of several such farms which were to be established under the Hinterland Electrification Programme (HEP). At the time, a budgetary allocation of almost $1 billion was announced to implement a series of renewable energy and energy efficiency projects. This would include the installation of the first solar farm on a large scale in Mabaruma. When operational, the 400-kilowatt solar farm would afford an additional 17 hours of electricity to the 3,000 residents of Mabaruma. It will include a 134kWh battery storage and a 500kVA power transformer. A working solar farm in Mabaruma would provide the impetus for similar imminent renewable energy projects ambitiously highlighted in Guyana's First Voluntary National Review of the Sustainable Development Goals. These include planned solar PV farms at Bartica, Lethem, Mahdia, Port Kaituma, Kwakwani and Matthews Ridge.

Quantitative Goals

- The project is expected to generate approximately 560 MWh of electricity annually.
- The addition of renewables to the energy mix will reduce approximately 478 tons CO_2e / yr.

Steps Taken or Envisaged to Achieve Action

The Mabaruma solar farm has been in the works since 2017 under the former Government, as part of the Hinterland Electrification Project. The 400-kilowatt farm was designed and constructed by German company Meeco Group. Work on the project was supposed to have been completed by 2018. But over the years, the project was hampered by vandalism, non-delivery of items and faulty construction, which contributed to the project being damaged by a lightning strike. However, the project was finalised in 2020.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Provision of affordable, stable, and reliable energy to benefit both households and businesses. • Decrease in electricity generation costs. • Avoidance of CO_2 emissions. • Renewable energy solutions are introduced.	478 tons CO_2e / yr	The annual power generation of 560 MWh/yr is multiplied by an emission factor of 0.854 tons CO_2/MWh to estimate the annual GHG emission reductions. Grid emission factors for the Bartica Isolated system of Guyana (ton CO_2/MWh) from report Standardized baseline: Grid Emission Factors of Guyana Version 01.0, ASB0045-2019

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Emissions per year reduced.	tons CO_2e/yr	0	478	478
Installation of solar-powered system.	#	0	1	1
Installed capacity of solar PV farm.	MWp	0	0.4	0.4
Annual quantity of renewable energy generated.	MWh/yr	0	560	560

Name of Action	Gas to Energy Project					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2023-Ongoing	Ministry of Public Works (MoPW)	CO_2	National	Power Generation

Description and Objective

The Gas-to-Energy project is purposed to establish infrastructure so natural gas can be transported from the offshore Stabroek Block's Liza oilfield to an integrated gas processing facility at Wales, on the West Bank of Demerara. The project will deliver natural gas liquids (NGL) and dry gas to the government of Guyana. A subsea pipeline will be installed on the seafloor to transport natural gas from the Liza field to an onshore pipeline at the West Coast of the Demerara river. The onshore pipeline will deliver the gas to an integrated facility at Wales, on the West Bank of Demerara. At this facility, a NGL processing plant will treat the gas to remove NGLs for commercialisation, and a 300 megawatts power plant will use the dry gas to generate electricity for domestic use. The pipeline would transport up to ~50 million standard cubic feet per day of natural gas to the facilities.

Quantitative Goals

- The project will provide the fiscal space to cut the cost of power by 50%.
- Replacing imported heavy fuel oil (HFO) with Guyana's natural gas as the main source of electricity generation will significantly reduce emissions.
- Through the project, cooking gas and fertiliser will be sold to locals at reduced rates, and sell the remaining NGLs to third parties.

Steps Taken or Envisaged to Achieve Action

ExxonMobil Guyana is responsible for the installation of the pipeline. The Guyana government will handle the integrated facility at Wales. Some preparatory work has commenced but the substantive construction will have to wait on a few things. On ExxonMobil's side, the company is waiting on all regulatory approvals. While it has already received environmental authorisation from the EPA, the company is waiting for the Guyana government to approve its proposed revisions to the Liza field development plan and production license. When this is done, Exxon and its partners will make their final investment decisions and continue the substantive work. On the government's side, it is still working on securing the loan from the Export and Import Bank US (EXIM Bank) to meet the rest of the cost. ExxonMobil and the Guyana government plan to deliver the power plant and pipeline by the fourth quarter of 2024, to allow for a reduction in the cost of electricity. The NGL facility is expected to be completed the following year.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• A successful project has the potential to significantly reduce the cost of electricity in Guyana. • Reduce emissions through the shift to natural gas.	703,150 tons CO_2e / yr	The total capacity is 300 MW and 2,450,000 MWh/yr power generation. The power generation is multiplied by an emission factor of 0.287 tons CO_2/MWh to estimate the annual GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Amount of natural gas delivered through the pipeline to the integrated facility at Wales.	ft^3	0	50,000,000	0
Installed capacity of the power plant.	MW	0	300	0
Electricity generation for domestic use.	KWh	0	NA	0
Reduced cost of electricity in Guyana.	$ G	NA	NA	0
Share of natural gas in the national electricity generation.	%	NA	NA	0

Name of Action	EcoMicro Guyana					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2018-2022	Institute for Private Enterprise Development (IPED)	CO_2	National	Energy Efficiency

Description and Objective

The EcoMicro project is a technical assistance facility established to pilot green finance for Micro, Small and Medium Enterprises (MSMEs) across the Caribbean. By partnering with financial institutions (banks, credit unions, cooperatives, etc.) to develop new finance instruments to capitalize on opportunities in green financing, while adjusting their risk management models to climate change risk and incorporating climate impact assessment into their internal policies and operations. The project's goal is to facilitate green finance as a means to increase access to renewable energy and energy efficiency products. The project activities are broadly broken down into three key components as follows: (i) capacity development of finance institutions; (ii) access to clean and efficient energy products and services by MSME; and (iii) consolidating the green micro-finance ecosystem. The EcoMicro project for Guyana was funded by the Interamerican Development Bank (IDB) whereby the Development Alternatives Incorporated (DAI) Sustainable Business Group (SBG) worked with the Guyana Institute for Private Enterprise Development (IPED) to help Guyanese MSMEs grow through innovative green finance products. The direct beneficiaries of this project are 350 MSMEs across 8 of IPED's 13 Branches located in Pomeroon-Supenaam (Region 2), Demerara-Mahaica (Region 4), East Berbice-Corentyne (Region 6), and Upper Takutu-Essequibo (Region 9). These 8 branches account for 67% of their overall portfolio value and 62% of their overall client base. The project also aimed at training all 75 IPED staff in areas relating to designing and piloting of green finance, climate vulnerability and risk assessment, and institutional greening. IPED also received specialized technical assistance to design and pilot new green finance products to diversify their product offering, differentiate themselves from other financial institutions and attract new clients. IPED also benefited from institutional capacity building to analyse the vulnerability of its loan portfolio to climate change and incorporate climate risk management into future credit decisions, therefore reducing its portfolio at risk, as well as undertaking in-house renewable energy and energy efficiency measures to reduce their own operational GHG footprint.

Quantitative Goals

- Facilitating access for MSMEs to adopt renewable energy and energy efficiency technologies that complement, reduce the usage of, or substitute unreliable supplies of energy and displace energy from fossil fuels.

Steps Taken or Envisaged to Achieve Action

As part of the project, SBG conducted the following activities:

- Landscape assessment and market analysis across four regions of Guyana, including coastal, river, and rainforest areas to assess demand for renewable energy and energy efficiency products among IPED clients.
- Surveying a range of firms within IPED's portfolio, including agriprocessors, retail shops, hostelry, and catering businesses to better understand financing constraints, average energy usage, and opportunities to incorporate renewable energy and energy efficiency technologies and solutions.
- Designing a digital tool for IPED's loan officers to screen climate risk as part of their loan underwriting process and assist IPED in developing an institutional greening policy.
- Assisting IPED and its regional branch offices to develop green loan products.
- Assist businesses to responsibly finance the purchase of renewable energy generation and energy-efficient technologies, including new or upgraded refrigeration units, solar panels, and optimal insulation materials.
- Conducting a Technology Review that assessed the supply of renewable energy and energy efficiency technologies within the local market.
- Through a stakeholder-driven analysis included, assessing strategic partnerships that would complement the comparative advantages of IPED and ensure alignment with national programs and objectives.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Green financial products developed and launched to help MSMEs invest in GHG mitigation technologies. • IPED equipped with a climate risk evaluation tool to analyse and reduce the climate change vulnerability of its loan portfolio. • IPED´s environmental impact reduced. • Enhanced capacities at IPED to promote investments in green technologies while reducing climate change vulnerability.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators				
Indicator	**Unit**	**Baseline**	**Target**	**Progress**
Number of MSMEs adopting renewable energy and energy efficiency technologies.	#	0	350	14
Financing mobilized from IPED´s balance sheet for green strategies accessed by MSMEs clients.	$ million USD	0	1,000,000	42,155
Number of green finance products developed and made available to MSMEs.	#	0	2	2
Number of IPED employees training on renewable energy and energy efficiency finance products.	#	0	75	75
Proportion of credit decisions utilizing climate risk tool.	%	0%	100%	75%

Name of Action	Transitioning to National Energy Security: Bartica as a Model Green Town					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling Activity	Ongoing	2017-Ongoing	Office of Climate Change (OCC)	Not Applicable	Region 7	Energy Efficiency

Description and Objective

Bartica is a small community situated on the Essequibo River, 80 km inland from the Atlantic Ocean. As part of Guyana's pursuance of Green Economy as a development paradigm, the primary objective of this project is to establish a reliable point of reference for the existing state of energy use in Bartica from which the data generated will be used for future measurements and predictions for evidence-based decision making and pursuance of projects and programs. As such, the project aims to increase the capacity of planning for the Government of Guyana by carrying out energy audits and baseline studies in one model town, Bartica. The secondary objectives are the first tier interventions that are expected to stimulate and expedite a comprehensive and robust renewable energy uptake program in the New Bartica Township. This includes:

- The sensitization and awareness of the Bartica populace.
- Conducting household baseline study of the Bartica community.
- Complete an energy audit of public institutions, facilities and street lighting in Bartica.
- Energy efficiency pilot implemented with government agency.
- Transportation sector energy audit.

Quantitative Goals

- Reduced energy demand to reduce emissions and energy cost for consumers.
- Transitioning Bartica from a 100% fossil fuel based economy to more reliance on clean energy generation.

Steps Taken or Envisaged to Achieve Action

The main aim is to ensure that Bartica, as a new municipality, follows the green economy development paradigm. In this regard, data capture through various audits, building awareness, and completing demonstration/pilot type activities are critical. In this context, the technical activities as part of the project are split between different work packages:

- Work Package 1: Sensitization and Awareness
- Work Package 2: Conduct Household Baseline Survey of the Bartica Community
- Work Package 3: Complete an Energy Audit of public institutions, facilities and street lighting in Bartica
- Work Package 4: Transportation Sector energy audit
- Work Package 5: Energy Data Management Centre

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions

• Information for a competitive bid process for large scale renewable energy supply for Bartica. • Energy conservation and energy efficiency for energy and economic savings. • Enhanced streetlighting for security and safety. • Data of the local baseline energy characteristics and performance. • Reducing pollutants from vehicles and reduce the incidence and severity of respiratory and cardiovascular diseases.	Not Applicable	Not Applicable

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Content manual to effectively communicate details about project including benefits and plans.	#	0	1	1
Stakeholder workshops and community fora.	#	0	2	2
Baseline household data set.	#	0	1	1
Report on the dynamics of household appliances and energy consumption and use.	#	0	1	1
Report on energy audit of public institutions, facilities, and street lighting.	#	0	1	1
Localized study report on energy use in transport sector.	#	0	1	1
Recommendations on reduction of inefficiencies in transport sector in Bartica.	#	0	1	1
Energy data management centre operationalised.	#	0	1	1

Name of Action	Promotion of Energy Efficiency Measures in the Manufacturing and Service Sectors					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2011-2013	Guyana Manufacturing & Services Association (GMSA)	CO_2	National	Energy Efficiency

Description and Objective

The GMSA energy efficiency project will pilot and promote the adoption of energy efficiency measures in the manufacturing and service sectors in 5 pilot companies, resulting in reductions in energy use and the cost to industry of energy. Additionally, it is envisaged that the results of the project will be used to influence policy changes at the national level that address the quality of supply and utilization of energy in the manufacturing and service industries. The project is critical to the development of enterprises in Guyana since it directly addresses the often-contentious issue of high energy costs. It sensitises companies especially in the manufacturing and services sectors to the best means of measuring and managing their energy distribution equipment/components and consumption, to make the most efficient use of their energy applications and simultaneously, employ the most effective methods of energy conservation.

Quantitative Goals

- Implementation of the energy efficiency programme in 5 pilot companies.
- Increase of the energy savings in the 5 pilot companies.
- Reduce at least 800 tons CO_2e in the 5 pilot companies.

Steps Taken or Envisaged to Achieve Action

The five pilot companies selected to represent the manufacturing and service sector were Sterling Products Ltd. representing the agro-processing sub-sector, Caribbean Containers which represents the packaging sub-sector, Demerara Mutual Life Insurance Company representing the services sector, National Milling Co. (NAMILCO), the Edward B. Beharry Group and Brass Aluminium & Cast Iron Foundry (BACIF). These pilot companies were guided across the business spectrum towards effectively managing their energy costs through the application of conservation methodologies, technological adaptations and best practice techniques.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• To assess and audit energy consumption trends in pilot companies across five sub-sectors, in order to demonstrate how the adoption and implementation of energy efficiency technologies/measures can result in the reduction of high energy bills as a percentage of operation cost.	291 tons CO_2e / yr	During the implementation years of the project (2012-2013) a total of 582 tons CO_2e was reduced/saved. It is assumed that an equal share of GHG emission reductions occurred during these two years.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
5 energy efficiency programs implemented in pilot companies.	#	0	5	5
15 energy efficiency experts trained on energy audits acting as energy efficiency MSMEs.	#	0	15	33
Increased awareness among 100 private sector companies on the demonstrative benefits of adopting energy efficiency measures and promotion at the national level.	#	0	100	85
5 MSMEs benefitting from clean or efficient energy.	#	0	5	5
Energy saved in kwh.	kWh	0	NA	824,186
At least 800 tons CO_2, emissions reduced/saved.	tons CO_2e	0	800	582

Baseline survey conducted for at least 5 pilot companies and energy efficiency consuming appliances/components for the respective companies.	#	0	5	6
Guidelines for live-in plant monitoring and variance analysis developed for at least 5 pilot companies.	#	0	5	6
Development of sector benchmarks and action plans for implementation of energy efficiency program for at least 5 companies.	#	0	5	6
At least 15 technical staff from 5 pilot companies trained to effectively implement company action plans and monitor program.	#	0	15	30
Pilot assessment and audit study prepared and disseminated.	#	0	1	1
Host at least 2 national workshops to share the results of the pilots.	#	0	2	5

Name of Action	Project for the Introduction of Renewable Energy and Improvement of Power System in Guyana					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2018-2022	Guyana Energy Agency (GEA)	CO_2	Region 4	Energy Efficiency

Description and Objective

The objective of the project is to improve the efficiency of the power systems by enhancing the quality of the substation equipment and distribution lines within the City of Georgetown and the surrounding areas. As well as, by installing and demonstrating a solar photovoltaic system and energy management system at the Caribbean Community (CARICOM) Secretariat, thereby contributing to economic development within Guyana. It has two components, namely the:

- Procurement of electric power distribution materials (293km of Cosmos Wire, 48 pole-mounted transformers and 2x1500kVA power factor compensators) and 2x5MVAr reactive power compensators for the Guyana Power & Light Inc. (GPL).
- Procurement of a 400kWp solar PV power generation system with battery storage and a Building Energy Management System (BEMS) for the CARICOM Secretariat.

The project will directly solve the problems of power loss and power supply reliability that GPL has, by installing reactive power compensators and procuring distribution equipment and materials. These components will greatly help to improve GPL's profitability and reduce CO_2 emissions emitted from thermal power plants. In addition, this project will materialise the renewable energy and energy conservation policy of CARICOM by installing a PV system and BEMS. Also, it is highly expected that the PV system and BEMS installed in the CARICOM secretariat building will showcase the technologies to CARICOM member countries and regions.

Quantitative Goals

- Enhancing power supply reliability and reducing technical loss by introducing reactive power compensator in the project target areas.
- Enhancing power supply reliability and reducing technical loss by improving distribution network in the project target areas.
- Renewable energy is supplied to CARICOM Secretariat main building by introducing PV system with battery.
- Promote energy saving by introducing BEMS with functions which visualize electricity usage and control air conditioner.

Steps Taken or Envisaged to Achieve Action

The GPL component was completed on September 29, 2021 and the one year defect notification period for the reactive power compensators expired on September 28, 2022. Regarding the CARICOM component, the 400kWp solar PV power generation system with battery was completed on January 11, 2022 but had to be taken out of operation on March 28, 2022 due to defective equipment (PV panels and battery modules). Following the completion of an investigation by the contractor and equipment manufacturers into the possible cause of the equipment failure, partial (200kWp) operation of the system was restored on August 6, 2022 pending receipt of the replacement equipment from Japan in January 2023. Meanwhile, the BEMS was completed on November 23, 2022 and additional O&M training for staff completed from November 21-22, 2022

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Enhance the efficiency of electricity sector in Republic of Guyana through the installation of renewable energy and energy saving facilities.	429.65 tons CO_2e / yr	The total estimated annual energy is 650 MWh. The power generation is multiplied by an emission factor of 0.661 tons CO_2/MWh to estimate the annual GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Introduction of reactive power compensator.	#	0	2	2
Improving distribution network.	km	0	293	293
Introduction of PV system.	#	0	1	1

Introduction of BEMS.	#	0	1	1

Name of Action	Electric Vehicle Supporting Infrastructure					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2019-2023	Guyana Energy Agency (GEA) and Guyana Power and Light Inc. (GPL)	CO_2	Regions 4 and 6	Transportation

Description and Objective

By 2030, Guyana aims to have made significant progress on the transition from a transportation system largely built around petroleum and diesel vehicles, to one which introduces other affordable and competitive transportation options including electric public and private ground transportation. To achieve such an ambitious target, Guyana has launched a pilot project to provide the necessary supporting infrastructure to enable electric vehicle (EV) adoption in the country by addressing enabling factors for adequate EV supporting infrastructure provision through a 3-prong approach: (i) providing access to cheaper and cleaner electricity to power EVs via comprehensive renewable energy diversification and electrification initiatives; (ii) providing access to EV charging stations; and (iii) reducing EV acquisition costs. This particular project focuses on components (ii) and (iii), whereby component (i) is achieved through the above-mentioned efforts under the energy sector.

Quantitative Goals

- Reduce supporting infrastructure barriers for EV adoption in Guyana through the construction of 6 public EV charging stations and the introduction of financial incentives to encourage private investment in charging station construction.

Steps Taken or Envisaged to Achieve Action

With 2022 budget support, GEA and GPL have partnered to install 6 public electric vehicle charging stations in Regions 4 and 6 as part of a pilot project to support the nascent electric-mobility sector. The 6 public electric vehicle charging stations were installed at: S & R Parking Lot, Guyana Energy Agency, Movie Towne, Giftland Mall, Massy at Providence, Little Rock Suites. The government of Guyana is also encouraging private providers who wish to establish charging to do so, through the removal of customs duty for the set-up of electric vehicle charging stations. Guyana's Ministry of Finance published the Budget Speech 2023, which was delivered on 16 January 2023 and included the following two measures to promote EV uptake, effective as of 1 January 2023: (1) EVs are exempt from customs duty, excise tax, and value-added tax (VAT); and (2) A 50% per year writing down allowance is provided for all businesses that invest in switching to EVs. To prepare locals for the automotive transition, the government has also been facilitating training for Guyanese auto-technicians in EV maintenance and repairs. Furthermore, the government has approved a policy to promote the procurement of electric vehicles for Government Ministries and Agencies, where appropriate,

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Increased EV adoption throughout Regions 4 and 6 through enhanced access to EV charging infrastructure, coupled with favourable policy and financial incentives for public procurement and private purchase of EVs. • 6 public EV charging stations installed in Regions 4 and 6.	Not Applicable	Not Applicable

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of public EV charging stations installed.	#	0	6	6
Number of financial incentives provided for EV purchases.	#	0	5	5

Name of Action	Sustainable Business Models for Rural Electrification and Energy Access in Guyana

Type of Action	Status	Duration	Implementing Entity	GHG Coverage	Geographic Scope	Sectoral Scope
Enabling Activity	Completed	2015-2019	Hinterland Electrification company Inc. (HECI)	Not Applicable	Regions 1, 2, 7, 8, 9	Rural Electrification

Description and Objective

The Sustainable Business Models for Rural Electrification and Energy Access project aims to increase sustainable, affordable, and reliable access to renewable energy technologies to rural communities in regions 1, 2, 7, 8, and 9 of Guyana while ultimately improving the quality of lives for those living in the hinterland regions. This will allow for at least 6,000 homes across 25 hinterland communities to receive solar home systems. In this context, the general objective is to improve institutional capacities including training of sector staff and promote the use of renewable energy technologies in the urban areas and the Hinterlands, with the aim to: (i) implement sustainable business models for operation and maintenance; (ii) increase quality energy access in the country; (iii) reduce long-term operational costs of on-grid and off-grid electricity service; and (iv) contribute to sector sustainability and reduction of GHG emissions. Additionally, community members and other energy sector agencies will be trained in technical, operational, social and environmental aspects of the project.

Quantitative Goals

- Facilitation for the implementation of 6,000 solar home systems across 25 hinterland communities with a total capacity of 0.36MW.
- Electrification of the 80% of rural areas in Guyana that have no electricity.

Steps Taken or Envisaged to Achieve Action

The project, which is being spearheaded by the Ministry of Public Infrastructure's Hinterland Electrification Unit (HEU), is a collaboration with the not-for-profit company, CARIBSAVE, and the Multilateral Investment Fund (MIF), a member of the Inter-American Development Bank (IDB) Group.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Development of business models for solar for solar photovoltaic systems which will be installed in community buildings in the 25 communities. • Expansion of renewable energy sources leading to an overall positive impact on the environment and improvements to people's lives. • Increase of sustainable, affordable, and reliable access to renewable energy technologies to rural communities.	Not Applicable	Regarding the total capacity of the 6,000 solar home systems, it is assumed that each solar home system has a size of 60W as can be observed in several Hinterland villages.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of implemented sustainable business models.	#	0	NA	NA
Share of rural areas in the Hinterland regions electrified.	%	20%	100%	NA
Number of implemented solar home systems in the Hinterland communities.	#	0	6,000	NA

Name of Action	Sustainable Energy Program for Guyana					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2013-2023	The Hinterland Electrification Company Inc. (HECI) and Guyana Energy Agency (GEA)	CO_2	National	Rural Electrification

Description and Objective

The general objective of the program is to promote and support sustainable energy projects in Guyana, in order to contribute to Guyana's energy security, energy access, reduction of fossil-fuel dependence and provide additional opportunities to reduce GHG emissions. The specific objectives are: (i) to support the use of solar, small-hydro and wind energy resources; and (ii) create social awareness of sustainable energy. To promote and support sustainable energy programs in rural areas of Guyana. The specific objective of the first component is to foster the transition to alternative renewable energy and improve energy access in un-served and/or isolated communities with the following sub-components: (i) support to the design/installation/completion of renewable pilot projects; (ii) revision of the legal, institutional and regulatory framework of the electricity sector affecting the deployment of non-conventional renewable initiatives; and (iii) support the development of on-grid renewable projects to reduce fossil-fuel dependency. On the other hand, the second component focuses on supporting the ongoing creation of adequate knowhow, in order to guarantee the long-term sustainability of the implemented renewable energy projects.

Quantitative Goals

- Increased access to electricity throughout Guyana, targeting 90% of the population, while enhancing the penetration of solar, wind, and small-hydro energy sources.

Steps Taken or Envisaged to Achieve Action

Concerning the promotion of solar energy sources, a total of 154kW of off-grid solar PV systems were installed in 9 rural communities across Guyana estimated to benefit 7,000 residents directly and indirectly, all of which have been commissioned and are now operational. As well, a total of 180kW of grid-tied solar PV systems on 7 public buildings in the capital city of Georgetown, including secondary schools, tertiary institutions, and Ministries. Concerning the promotion of small-hydro energy sources, the program provided support to Kato village in Region 8, through the construction of a 150 kW run-of-the river power plant at the Kato waterfall site located on the Chiung River, a 13.8 kV primary distribution network from the power plant to the Kato Secondary School and thence to the Kato village, and a 120/220 V secondary distribution network in the Kato village. Construction progress has been slowed due to the effects of Covid-s9 pandemic compared to original program schedule, but are continued and improved. These small-hydro efforts from the Sustainable Energy Program would enable Regions 8 to transition to 100% renewable energy. Concerning the promotion of wind energy sources, in-depth data was collected at the Onverwagt Wind Measurement Station, with analysis indicating that there is sufficient wind resource for a utility-scale wind project in that area.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• 7,000 residents across 9 rural communities given access to electricity generated from solar PV sources. • Increased awareness and capacity for renewable energy project implementation and use.	842 tons CO_2e / yr	It is assumed that the KATO hydropower lant would produce 968 MWh/yr, replacing a grid emission factor for Region 8 of 0.854 tons CO_2e/MWh. For electrification of urban and rural areas through PV systems, it is assumed 0 emissions are saved, as in the majority of cases these PV systems provide new electricity access. Even in some cases, diesel generators for shops and houses are being replaced by the PV systems, there is insufficient information to estimate the value of associated GHG reductions. Further feasibility studies and

• Diversification of local economies and employment creation in renewable energies.		preliminary design would need to be conducted for the wind sites for estimating their renewable energy and GHG reduction contribution.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Proportion of population with energy access.	%	85	90	86
Installed capacity of solar PV systems for rural electrification.	kW	0	154	154
Installed capacity of solar PV systems in urban areas.	kW	0	180	180
Installed capacity of hydroelectric systems for rural electrification.	kW	0	150	150
Number of wind measurement stations analysed.	#	0	2	1
Number of trainings conducted.	#	2	7	6

Name of Action	Solar Home Systems					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2021-Ongoing	Guyana Energy Agency (GEA)	CO_2	National	Rural Electrification

Description and Objective

The project, known as the '30,000 solar home systems' project, was designed to balance the energy gap between urban and rural areas, simultaneously propelling the nation towards sustainable, eco-friendly power sources. Under the project, a total of 30,000 homes across various regions of the country will receive 150-watt solar PV systems. The project's completion is anticipated in 2024, with successful implementation promising a significant leap forward in the country's renewable energy landscape.

Quantitative Goals

- Installation of thirty thousand (30,000) 150-watt solar home systems.

Steps Taken or Envisaged to Achieve Action

In 2020, 2021, 2022, and 2023, solar PV systems were installed at a number of public buildings across the hinterland regions. These included health centres, community centres, food processing, and educational facilities. For instance, in 2020, a 0.4 MW solar PV farm, the first in Guyana, was commissioned in Mabaruma, Region One (Barima-Waini). Following its operationalisation, solar PV farms were also commissioned at Lethem, Region Nine (Upper Takutu-Upper Essequibo) in 2022, and Bartica, Region Seven (Cuyuni-Mazaruni) in 2023. Furthermore, in 2023, a 0.5 MW solar PV farm is eyed for completion at Wakenaam, Region Three (Essequibo Islands-West Demerara), and a 0.65 MW solar farm is envisaged for completion in Mahdia, Region Eight (Potaro-Siparuni).

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Provide electricity to off-grid households and micro enterprises, through individual Solar Home Systems.	5,003.71 tons CO_2e / yr	These 30,000 households total 4.8MW installed capacity. The figure represents energy produced by the solar panels, without which would have required fossil-based energy sources. The annual energy (MWh) is estimated through the following equation: 4800*4.8*365*0.85)/1000 The total estimated annual energy is estimated at 7,148.16 MWh. The power generation is multiplied by an emission factor of 0.7 tons CO_2/MWh to estimate the annual GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Installation of solar home systems	#	0	30,000	NA

Name of Action	Solar PV Mini-grids					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2021-Ongoing	Guyana Energy Agency (GEA)	CO_2	Region 1, 2, 7, 8, 9, 10	Rural Electrification

Description and Objective

The project includes the installation of 31 solar PV mini-grids with a total capacity of 919kW for public and community buildings. This includes solar PV mini-grids at Sebai, Karaburi, Kwebanna, Haimacabra, Baramita and Canal Bank of Region 1; Wakapao, Capoey Mission, St. Monica and Tapakuma, of Region 2; Waramadong, Paruima and Jawalla of Region 7; Kurukubaru of Region 8; Annai, Karasabai, Aishalton and Kraudarnau of Region 9; and Riversview of Region 10. Through this project, electricity will be provided to these communities with solar PV and battery storage. The mini-grid is an aggregation of several energy generators, powered by one main grid to disperse electricity to a small, local group of beneficiaries.

Quantitative Goals

- The project is expected to generate approximately 1,369.32 MWh of electricity annually.
- The addition of renewables to the energy mix will reduce GHG emissions.

Steps Taken or Envisaged to Achieve Action

Nine of these mini-grids have already been completed, with 28 communities set to benefit so far from this project.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Provide affordable, stable, and reliable energy to benefit both households and businesses. • Avoidance of CO_2 emissions. • Renewable energy solutions are introduced.	958.52 tons CO_2e / yr	31 solar PV mini-grids with a total installed capacity of 919kW. Figure represents energy produced by the solar panels, without which would have required fossil-based energy sources. The annual energy (MWh) is estimated through the following equation: 919.5*4.8*365*0.85/1000 The total estimated annual energy is estimated at 1,369.32 MWh. The power generation is multiplied by an emission factor of 0.7 tons CO_2/MWh to estimate the annual GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Solar PV mini-grids installed	#	0	31	9
Communities gaining access to renewable energy	#	0	NA	28

Name of Action	Moraikobai Micro-grid PV System					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2018-2020	Guyana Energy Agency (GEA)	CO_2	Region 5	Rural Electrification

Description and Objective

The project included the installation of a 72kWp (0.072 MWp) solar micro-grid in Moraikobai which will provide electricity from a renewable energy source to supply approximately 270 households (approximately 1,000 persons). The project will allow an increase in the duration of daily electricity supply from 4 hours to 12 hours, avoid annual CO_2 Emissions of 70,199.57 kg (70.20 tons CO_2) and will generate about 97.36 MWh of energy annually.

Quantitative Goals

- The project is expected to generate approximately 97.36 MWh of electricity annually.
- The addition of renewables to the energy mix will reduce approximately 70.20 tons CO_2e / yr.

Steps Taken or Envisaged to Achieve Action

The system was completed and operational by the second quarter of 2020.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Provide affordable, stable and reliable energy to benefit both households and businesses. • Provide electricity to an off-grid community. • Avoidance of CO_2 emissions. • Renewable energy solutions are introduced.	70.20 tons CO_2e / yr	According to the 2019 annual report of the Guyana Energy Agency (GEA), the project will avoid annual CO_2 Emissions of 70,199.57 kg and will generate about 97.36 MWh of energy annually.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Emissions per year reduced	tons CO_2e / yr	0	70.20	70.20
Installation of micro-grid PV system	#	0	1	1
Installed capacity of micro-grid PV system	MWp	0	0.072	0.072
Annual quantity of renewable energy generated	MWh/yr	0	97.36	97.36

Name of Action	Power Utility Upgrade Program					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2014-2021	Guyana Power and Light Inc. (GPL)	CO_2	Regions 2, 3, 4, 5, 6, 9, 10	Training and Development

Description and Objective

The program aims to improve the efficiency and reliability of Guyana's power system through electricity loss reduction measures, improvements in the operational capabilities, and strengthening the management and corporate performance of the country's utility, GPL. As Guyana's energy demand increases, the distribution infrastructure will experience greater stresses, and in turn, this will challenge GPL's management and its ability to manage electricity supply. The Power Utility Upgrade Program is designed as a holistic, integrated approach to support GPL with financing for critical infrastructure investments and technical support for GPL's key business areas. This support should increase GPL's overall performance, reinforce GPL's operational capabilities, and the achievement of a sustained trend in overall loss reduction. As such, the programme aims to improve the safety and reliability of the GPL electricity distribution system by financing infrastructure specifically focused on the reduction of electricity losses, deploying a strong Corporate Development Program to manage GPL's operations and implement solutions to GPL's longstanding problems, while improving quality of service through: (a) the rehabilitation of the existing distribution network and associated equipment as part of a strategic loss reduction programme; and (b) the strengthening of GPL, in order to contribute to the enhancement of its corporate capacities, which will help to achieve a set of performance targets for GPL.

Quantitative Goals

- The program will rehabilitate approximately 830 kilometres or 40% of GPL's distribution network.
- Installation of 43,838 smart meters throughout the regions.

Steps Taken or Envisaged to Achieve Action

The Power Utility Upgrade Program engaged almost 4900 stakeholders in 176 communities across the regions of Guyana to make them aware of the activities as part of the programme, which included planting new poles, stringing of new conductors, upgrading the distribution network and installing new meters to reduce voltage fluctuations, reduce the frequency of power outages, eliminate all faulty network connections, sustain the life expectancy of the electrical appliances, and eliminate low voltage supply. This has allowed GPL to expand and equip the power system to take off and manage the forecasted electricity demand, and provide services, and operate at the required reliability levels of a modern power utility company.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Sustained trend in overall loss reduction. • Improved and accountable management performance within minimum international standards. • Modern, efficient, and reliable operational systems in GPL.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Rehabilitation of distribution network.	Km	0	830	830
Rehabilitation of distribution network.	%	0	40	40
Installation of smart meters.	#	0	43,838	43,838
Reduction of electricity losses.	%	31.4	25.86	25.86

Name of Action	Sustainable Operation of the Electricity Sector and Improved Quality of Service					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2011-2017	Guyana Power and Light Inc. (GPL)	CO_2	National	Training and Development

Description and Objective

As part of the overall objective of the GPL to reduce losses in the Demerara Berbice Interconnected System (DBIS), the project aimed at improving the overall efficiency of GPL's electricity power system. In this context, the general objective of the program is to improve the overall efficiency of the system by: (i) achieving a lower level of electricity losses; (ii) improving operation and maintenance of the distribution network; (iii) improving understanding of the main technical, financial, social, environmental and operational issues; (iv) reducing the incidence of theft of electricity; and (v) gaining commitment to the sustainability of the power sector. The program has financed three major components: (i) capacity building and energy conservation; (ii) rehabilitation of the low voltage distribution network; (iii) commercial loss reduction actions.

Quantitative Goals

- The program's interventions addressed the issue of technical losses by replacing 122.33 km of network, including conductors, transformers and the installation of new meters.
- Actions to reduce commercial losses included preparing consumer indexes and mapping, increasing the number of legal customers in the rehabilitated Low Voltage network and informing 15,000 customers on the rational use of energy and culture of payment

Steps Taken or Envisaged to Achieve Action

In order to achieve the objective of the project, the operation financed (i) capacity building and energy conservation; (ii) rehabilitation of the distribution network; and (iii) commercial loss reduction actions.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Achieving a lower level of electricity losses. • Improving the operation and maintenance of the distribution network. • Improving understanding of main technical, financial, social, environmental, and operational issues. • Reducing the incidence of theft of electricity. • Gaining commitment to the sustainability of the power sector.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Sustained decreasing overall losses trend achieved.	%	31.3	24.7	29.65
Level of losses in the low voltage network reduced.	%	6.0	4.98	5.53
Implementation of the ITRON Meters and prepaid meter program.	%	0	100	100
Number of customers informed on efficient energy usage and culture of payment in targeted areas for rehabilitation.	#	0	15,000	15,000
Increased number of legal customers in the low voltage rehabilitated and reconfigured network.	#	53,460	66,000	2,468

Name of Action	Power Sector Support Program					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2007-2012	Guyana Power and Light Inc. (GPL)	CO_2	National	Training and Development

Description and Objective

The Power Sector Support Programme (PSSP) was established to support the efforts of the Government of Guyana to promote a more sustainable and efficient energy sector. As such, the project included support activities in the electricity sector that will help promote the sustainable development of the energy sector and institutionalize policies and programs to (i) establish planning and priority setting in the sector; (ii) improve the enabling environment to encourage sustainable energy loss reduction and efficiency; (iii) provide institutional strengthening in order to assure regulatory capacity of the sector; (iv) strengthen the power utility provider (GPL) in order to address loss reduction on a sustainable basis, efficiency and quality of service; and (v) promote social awareness to curb loss reduction. Achieving these objectives will help to improve the financial stability of the company and the sector itself by bringing back "lost" customers, improving long term planning for the sector, and reducing losses that increase costs to all consumers. One of the desired effects of a successful program would also be an improved environment for new investment, thereby contributing to Guyana's competitiveness and growth.

Quantitative Goals

- Reduction of electricity losses to 25.5%.

Steps Taken or Envisaged to Achieve Action

The Program provided financing to execute the three components. Component 1 - Promote institutional, legal, and regulatory reforms. Component 1's objectives included a) strengthen the regulatory and legal framework to contribute to a more effective power sector with increased efficiency, transparency and accountability and b) contributing to more efficient and effective development of the power sector with a long-term strategy. Component 2 - Strengthen the Power Utility Company Capabilities. Component 2 sought to strengthen the utility's capabilities to manage a loss reduction program by contributing to improvements in corporate governance, transparency and accountability. Component 3 - Promote Sustainable Electric Loss Reductions. Component 3 objectives included a) coordinate consistent efforts to allow for effective overall electricity loss reduction and b) build consensus on the benefits of a sustainable power service.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Strengthened regulatory and legal framework to contribute to a more effective power sector with increased efficiency, transparency and accountability. • More efficient and effective development of the power sector with a long-term strategy. • Strengthened utility's capabilities to manage loss reduction program by contributing to improvements in corporate governance, transparency and accountability. • Coordination and consistency of efforts allow for effective overall loss reduction. • Building consensus on the benefits of a sustainable power service.	Not Applicable	Not Applicable. Emission reductions largely linked to energy efficiency measures captured under the Power Utility Upgrade Program: this includes capacity building, network rehabilitation or reconfiguration, upgrade and optimal relocation of distribution transformers at load centres, addition of new distribution transformers,

		interventions to pursue the reduction of commercial losses.

Progress Indicators				
Indicator	**Unit**	**Baseline**	**Target**	**Progress**
Updated legal and regulatory framework (PUCA/other related legislation) is fully enacted with operating regulations, where necessary, implemented for at least six consecutive months.	#	0	1	1
Development of a sector strategy.	#	0	1	1
Minutes of the board reflect procedures derived from new corporate administrative tools.	#	0	1	1
Electric losses are under 20.4% 5 years after program execution.	%	34.5	25.5	20.4
Customer survey results indicate increase of in willingness to pay and social awareness of full cost of electric losses.	#	0	2	2

Name of Action	Strengthening Capacity in Energy Planning and Supervision					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling Activity	Completed	2012-2016	Inter-American Development Bank (IDB)	Not Applicable	National	Training and Development

Description and Objective

In comparison with similar utility organizations, Guyana Power and Light Inc. (GPL) has a limited number of experienced staff and information resources, particularly within system planning and design, network operations, maintenance and system control and engineering services. The objective of this project is to strengthen capacity in the energy sector in Guyana through targeted support on training, technical and strategic planning, coordination, and supervision activities in government agencies. Specifically, the it provides for: (i) strengthening GPL's technical coordination unit with respect to energy projects; (ii) support to government agencies involved in the planning, data collection and analysis of energy data for the use of other energy sources in Guyana; (iii) strengthening of commercial demand-side management in GPL.

Quantitative Goals

- Establishing efficiently coordinated provision of energy services.

Steps Taken or Envisaged to Achieve Action

During the project, training will be provided to existing and new staff in: (i) operational management systems including Supervisory Control and Data Acquisition (SCADA) systems; (ii) power grid center systems; (iii) recording of data and management information related to interconnected system operation; (iv) analytical tools for operational management information and project management; and (v) procurement and financial support. Furthermore, technical advice and training will be delivered to promote improvements in data collection and analysis in order to facilitate coordination of energy demand and supply-side data between key governments agencies involved in monitoring the expansion of the energy sector in Guyana. Finally, it will assist in the design, execution, and monitoring of demand-side management, strengthening GPL's capabilities to adequately manage transparency and accountability of commercial operations, improved collection rate and reduced commercial losses.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Strengthen operational performance, enabling agencies such as GPL, Office of the President (OPS), Office of the Prime Minister (OPM), Power Utility Commission (PUC) and the Guyana Energy Agency (GEA), among others, to optimise and function to their required capacity.	Not Applicable	Not Applicable

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Information management training for new and existing staff in GPL.	#	0	1	1
Technical assessment of coordination capacity.	#	0	1	1
Training for staff in government agencies.	#	0	2	2
Commercial expert contracted in GPL.	#	0	1	1

2. Forestry

Name of Action	Institutional Strengthening for the Implementation of the LCDS 2030 under REDD+ Partnerships					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling activity	Completed	2011-2017	Guyana Forestry Commission (GFC) and Office of Climate Change (OCC)	CO_2	National	Forestry

Description and Objective

In July 2022, Guyana adopted the Low Carbon Development Strategy 2030 (LCDS 2030), an update from the original strategy set out in 2009. The LCDS 2030 aims at avoiding deforestation and maintaining forests, while growing the economy five-fold over 10 years and keeping energy emissions flat; investing in urban, rural and Amerindian development; protecting the coast and hinterland from climate change; creating jobs in a suite of low carbon sectors; aligning the education and health sectors with low carbon development; and integrating Guyana's economy with its neighbours. The LCDS sets out the following four inter-linked objectives: (i) value ecosystem services; (ii) invest in clean energy and stimulate low carbon growth; (iii) protect against climate change and biodiversity loss; and (iv) align with global climate and biodiversity goals. Under the first objective, Guyana sets out goals towards enhancing Reducing Emissions from Deforestation, Degradation and sustainable forest management (REDD+) partnerships. This project aimed to enhance the national institutional capacity in Guyana to address the impacts of climate change through the effective implementation of the LCDS 2030, and to assist Guyana in meeting its commitments under interim REDD+ partnerships. These commitments include the reduction of deforestation which translates into the avoidance of CO_2 emissions. The project was funded by result-based payments under Guyana-Norway partnership channelled through two ways: (i) the Guyana REDD+ Investment Fund (GRIF) and the Inter-American Development Bank (IDB) and (ii) direct engagement between Norad and Conservation International. The specific objective of the project was to strengthen the technical and administrative capacity of the three principal institutions responsible for implementing and monitoring, reporting, and verifying Guyana's LCDS 2030, namely the Office of Climate Change (OCC), the Project Management Office (PMO) and the GFC, through supporting the recruitment of specialized personnel with expertise in strategic fields, training and capacity building of permanent staff, and ensuring sufficient equipment and technical resources to ensure smooth running of the project. Additionally, the project aimed to conduct a diagnostic for future institutional strengthening which was to assess the institutional capacities of other Government agencies whose responsibilities are related to the LCDS and REDD+ activities.

Quantitative Goals

- Enhance national institutional capacity in Guyana to address the impacts of climate change via reduction of deforestation and while demonstrating its ability to earn the maximum portion of funds available via the GRIF.

Steps Taken or Envisaged to Achieve Action

On 9 November, 2009, Guyana and Norway signed a Memorandum of Understanding (MoU), agreeing that Norway would start to provide Guyana with result-based payments for forest climate services, whereby Norway intended to make performance-based contributions of up to $250 million USD by 2015 for results achieved by Guyana in generating the capacity to reduce emissions from deforestation and forest degradation, whilst creating a replicable model for REDD+. Guyana was set to be paid by Norway for performance on reducing GHG emissions from deforestation and forest degradation, and for progress made against enabling conditions including those relating to indigenous rights, consultation, and establishing a MRV system. In 2010, the IDB, the World Bank, Norway and Guyana developed the Guyana REDD+ Investment Fund (GRIF) in accordance with

the LCDS, constituting the financial mechanism that allows results-based payments associated with the interim REDD+ program. Among the activities undertaken, the capacities of the GFC, OCC, and PMO were strengthened by recruiting and training specialized technical and administrative personnel; investor negotiations with OCC and PMO were facilitated; junior staff in the PMO were trained on project management; and a diagnostic was conducted on future institutional strengthening needs of government agencies whose responsibilities are related to the LCDS and REDD+ activities such as the EPA and the GGMC. Through these activities, the PMO reported that, as of 2017, the Government of Guyana has received four results-based payments totalling $190 million USD of the $220 million USD potentially available through the GRIF under the bilateral agreement with Norway for the 2009-2015 period, which have been allocated to fund future LCDS related projects. Over 156 communications and outreach activities on LCDS and REDD+ were conducted. Methodologies for determining the extent and scale of forest degradation were developed and a digital database of archived satellite data and national spatial data sets were established. Historical and current drivers and processes affecting forest carbon levels were assessed and implementation plans for long term measurements and monitoring of national forest carbon stocks were developed. Within the GFC, eight technical staff were trained in the area of forest carbon stocks and change assessments; fourteen field staff were trained in forest carbon monitoring systems; and six staff were trained in GIS and Remote Sensing. Multiple reports and areas of research were advanced by the GFC, including: Assessment Report in Current Drivers and Processes Affecting Forest Carbon; Report on Independent Forest Monitoring; Report on Identification of Non-Carbon Ecosystem Services for Integration into Guyana's National MRVS Assessment; Report on Shifting Agriculture; and Report on Assessment of Requirements of a Monitoring System for Carbon as well as Non-Carbon Variables. Technical capacities of forest based indigenous communities were also built to engage in community-based monitoring for forest resources (Community MRV).

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Maintenance of forest cover by 85%. • Progressively decreased total level of deforestation across the five-year project implementation period from 0.056%, 0.054%, 0.079%, 0.068% to 0.065% respectively. • Full access to results-based payments potentially available through the GRIF to finance LCDS 2030 implementation. • Attainment of all LCDS 2030 goals.	Not Applicable	Not Applicable

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
LCDS execution capacity of the OCC score.	%	55%	72%	90%
LCDS execution capacity of the GFC score.	%	76%	85%	90%
Stakeholder awareness of LCDS.	%	60%	90%	72%

Name of Action	Guyana-EU Forest Law Enforcement, Governance and Trade Voluntary Partnership Agreement					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling activity	Ongoing	2012-2025	Guyana Forestry Commission (GFC)	CO_2	National	Forestry

Description and Objective

The Guyana-European Union (EU) Forest Law Enforcement, Governance and Trade (FLEGT) Voluntary Partnership Agreement (VPA) supports sustainable forest management, governance, and law enforcement in the trade of sustainable and legal timber products. The VPA aims to support governance reform and strengthen enforcement activities within Guyana´s forest sector, with commitments to improve transparency, accountability, legislative clarity, and other aspects of governance. Under the VPA, Guyana may issue FLEGT licenses on their timber exports under a national FLEGT Licensing Schemes based on a Legality Assurance System (LAS), ensuring that only legally produced timber produced in a sustainable manner are exported to the EU. The FLEGT VPA aims to foster business growth by shipping Guyana´s timber products to the EU and other global markets that are moving towards forest sustainability and new forest policies and laws.

Quantitative Goals

- Guyana-EU Forest Law Enforcement, Governance and Trade Voluntary Partnership Agreement finalized, in place, and fully operational.
- Empower Guyana´s forests to forge a green economy based on low levels of deforestation, reduced carbon emissions, and climate resilience.

Steps Taken or Envisaged to Achieve Action

In 2012, a policy decision was taken by the Government of Guyana to enter into formal negotiations with the EU on a FLEGT VPA. Guyana and the EU negotiated the terms of the VPA through a collaborative process with both Parties that shared the goal of fostering good forest governance and addressing illegality. Negotiations began through a multi-stakeholder process aimed at fostering national ownership, stakeholder engagement, wide participation, and a broad consensus to promote effective VPA implementation. Negotiations between the EU and Guyana began in December 2012, lasted for nearly six years, and were successfully concluded with the initialling of the agreement on 23 November 2018. The European Council adopted the Decision on the signing of the VPA with Guyana in October 2022. The final signing of the agreement took place at the UN Biodiversity Conference (COP 15) in Montreal on 15 December 2022, whereby the Minister for Natural Resources signed the agreement on behalf of Guyana and the EU was represented by the European Commissioner for Environment, Oceans and Fisheries and the Czech Deputy Minister of the Environment. It is intended that a period of preparedness will follow for 3-5 years to enable Guyana to effectively implement the VPA under EU-FLEGT by the issuance of FLEGT licences. Guyana has already begun taking significant steps to begin implementing the VPA under the period of preparedness, whereby Guyana enacted New Forest Regulations and gazetted the Code of Practice for Forests Operations in 2018, in addition to developing a national VPA Communication Strategy and held a virtual learning event for Forest Sector Operators (FSO) in 2020. To begin issuing FLEGT Licences, Guyana is upgrading existing the national Wood Tracking System (WTS) to develop a robust timber legality assurance also known as the Guyana Timber Legality System (GTLAS). The FLEGT Licensing Scheme will take effect when the GTLAS is successfully evaluated, and Guyana and the EU are satisfied that it functions as described in the VPA. Guyana also has a series of VPA Annexes which describe the practical components for implementing the core commitments in the VPA in detail. Further legal works are being conducted by Guyana including identifying and addressing possible gaps in the forest allocation process and the legal framework; stakeholder capacity-building; improving procedures for verifying legal compliance; developing approaches that ensure the traditional rights of Amerindian peoples are not impeded; and establishing independent audits, a complaints mechanism, and systems and procedures for information on the forest sector to be publicly available. Additional resources are required to build institutional and private sector capacity to meet other trade and supply conditions such as the Lacey Act, Forest Stewardship Council (FSC) certification, and other procurement requirements.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions

• Reduced deforestation from illegal logging and its associated socioeconomic problems. • Strengthened forest sector governance and improved regulatory frameworks with formalized multi-actor and multi-sector structures, including reinforced capacities of the GFC. • Modernized Wood Tracking System and Timber Legality System. • Increased transparency, reputation, and accountability. • Strengthened capacities among forestry sector stakeholders for sustainable forest management. • Sustainable economic growth and expansion securing Guyana's access to EU and other international Markets for sustainable timber products. • Enhanced community benefits through a sustainable livelihoods approach, including local communities, Forest Sector Operators, and Indigenous peoples.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Level of transparency in the forestry sector.	%	53.0%	100%	71.3%
Level of implementation of sustainable forest management plans.	%	51.4%	100%	70.6%
Level of timber harvesting qualified as legal.	%	53.7%	100%	57.8%
Level of legal timber traded on the export market.	%	62.5%	100%	78.5%
Level of legal timber traded on the domestic market.	%	54.2%	100%	68.1%
Tax collection efficiency of the forestry sector.	%	41.7%	100%	52.4%

Name of Action	Guyana REDD+ Monitoring Reporting & Verification System (MRVS)					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling activity	Ongoing	2010-2025	Guyana Forestry Commission (GFC)	CO_2	National	Forestry

Description and Objective

This activity has designed, implemented, and is currently improving the Monitoring, Reporting and Verification System (MRVS) for the forestry sector in Guyana as a key element to enable the performance-based payments of Guyana's REDD+, and support Guyana´s carbon markets through mechanisms such as ART-TREES. The design of the MRVS comprised three phases, each with a progressively ambitious objective as follows: Phase 1 had the goal to establish the MRVS, Phase 2 had the goal of consolidate and expand capacities for national REDD+ monitoring, and Phase 3 has the goal to maintain an efficiently functioning MRVS that meets international and national requirements and supports natural resources management in Guyana. The MRVS aims to establish a comprehensive, national system to monitor, report, and verify forest carbon emissions by tracking forest change due to both deforestation and degradation, by tracking change drivers and the interpretation of national coverage high-resolution satellite imagery.

Quantitative Goals

- A fully operational MRVS system is in place in line with REDD+, UNFCCC, and IPCC standards, with enhanced capacities for inter-institutional multi-dimensional use of its benefits, including access to international carbon markets as a source of sustainable income to fund domestic climate action, as well as to enhance monitoring and enforcement of forest-based activities in the country.

Steps Taken or Envisaged to Achieve Action

A climate and forest partnership between the Government of Guyana and the Government of Norway was established in 2009, which included the progressive development of the Guyana Monitoring Reporting and Verification System (MRVS). In 2009 Guyana brought forth a framework for a national MRVS and a roadmap for its phased development, improvement, and implementation. Under Phase 1 (2010 to 2015) Guyana´s MRVS was established for implementing REDD+ policies and to receive results-based compensation for such activities, while building capacity in the GFC to carry out forest cover and change monitoring and forest carbon monitoring, as well as fostering stakeholder awareness and participation in MRVS design and implementation. Under Phase 1, reference measures and interim indicators were developed and applied while aspects of the MRVS were under development and were to eventually be phased out and replaced by a complete forest carbon accounting system as methodologies are further developed. The continued development and implementation of Guyana's MRVS under Phase 2 (2016 to 2021) maintained its focus on the implementation and further development of the key technical areas of forest area change assessment and monitoring and forest carbon measurement and monitoring. Emphasis was placed on improvements in the emissions and removals reporting, and application of the system to improve forest management, achieving in 2018 the total forest carbon and removals accounting for the first time. Over the years, Guyana's MRVS has become an internationally acclaimed model and an enabler to enter voluntary international carbon markets. On 18 December, 2020, Guyana submitted an application to the Architecture for REDD+ Transactions (ART) Secretariat, and as of December 2022, ART has issued the world´s first TREES credits to Guyana, whereby each credit represents 1 ton CO_2e. A total of 33.47 million TREES credits for the five-year period from 2016 to 2020 were issued to Guyana. It is anticipated that an additional 7.5 million credits per year will be issued on average from 2021 to 2030 under the ART-TREES initiative. The country is allocating 85% of revenues from their sale to multi-community and national programs, and 15% to village-led sustainability plans for indigenous communities. Under Phase 3 (2022-2025), Guyana will further improve the MRVS to attain further participation in the ART-TREES initiative and fully adhere to emerging TREES standard. Hess Corporation has committed to purchase 37.5 million ART-TREES credits consisting of 12.5 million of the 33.47 million carbon credits issued for the period 2016-2020, and an additional 2.5 million per annum from the credits to be issued each year from 2021 to 2030, at a minimum unitary cost of $15, $20, and $25 USD per credit issued in 2016-2020, 2021-2025, and 2026-2030, respectively. In this Phase 3, the GFC and other land management agencies see a compelling need to monitor land cover change more frequently to extend the inter-sectoral benefits of the system beyond current use. MRVS Phase 3 will support the improvement of the necessary human and physical capabilities sustained by local institutions and create the platform for monitoring, reporting, and compliance verification under a market-based mechanism. This phase will continue to see routine annual reporting on forest carbon emissions and removals in compliance

with UNFCCC and IPCC requirements. Simultaneously, this phase will create complementary systems for reporting on REDD+ governance compliance requirements, such as supporting REDD+ forest sector safeguards, Guyana's Nationally Determined Contributions, and the UN Sustainable Development Goals 13 and 15. To date, eleven national assessments (2010 to 2021) have been conducted and issued by the GFC.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Maintenance of low rates of deforestation and degradation leading to 33.47 million carbon credits issued over the 2016-2020 period and an additional 7.5 million credits issued per year over the 2021-2030 period. • Sustainable income generated to support 242 village-led sustainable development plans among indigenous communities. • Sustainable income generated to support LCDS 2030 implementation unlocking transformative investments in renewable and low-carbon energy generation; climate change adaptation and biodiversity loss; green job creation; health and education; and expanded protected areas.	108.47 million tons CO_2e	Guyana has been issued 33.47 million ART-TREES credits for the period 2016-2020, with an estimated additional 75 million credits to be issued for the period 2021-2030. Each credit being equivalent to 1 ton CO_2e, the total reduction over the 2016-2030 period is estimated at 108.47 million tons CO_2e.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of ART-TREES credits issued.	#	0	108.47	33.47
Number of ART-TREES credits sold (actual and anticipated to 2030).	#	0	37.5 million	12.5 million
Value of ART-TREES credits sold (actual and anticipated to 2030).	$ USD	0	750 million	150 million

Name of Action	Forest Carbon Partnership Facility Project in Guyana					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling activity	Completed	2014-2020	Guyana Forestry Commission (GFC)	CO_2	National	Forestry

Description and Objective

The objective of the technical cooperation assisted Guyana in its efforts to establish an enabling framework and build its capacity for REDD+ by providing financial and technical assistance aiming to (i) improve the organization of the country for REDD+ Readiness, including stakeholder consultations; and (ii) develop the Guyana REDD+ Strategy to facilitate Guyana's access to additional funding under performance-based incentives. In Guyana's case, REDD+ goals include mitigating climate change; conserving water resources and prevent flooding; reducing run-off and control soil erosion; reducing river siltation; protecting inland and coastal fisheries; investing in hydropower facilities; preserving biodiversity; and preserving cultures and traditions. The FCPF project had three components as follows: (i) Component 1 - institutional arrangements and consultations for REDD+ readiness; (ii) Component 2 - REDD+ strategy development and implementation framework; and (iii) Component 3 - monitoring and evaluation of readiness activities. The objective of Component 1 was to strengthen the efficacy, accountability, and transparency of the national readiness management and institutional arrangements and increase stakeholder consultation and participation in REDD+ strategy development and implementation. The objective of Component 2 was to build capacities for REDD+ Strategy implementation including capacities to (i) verify and characterize the key drivers of deforestation and forest degradation; (ii) design conservation and sustainable forest management activities that reduce emissions; (iii) identify how current land use, and forest law, policy and governance structures impact on the drivers of deforestation and forest degradation; and (iv) propose alternatives for mitigating the identified drivers and responding to impacts. The objective of Component 3 was to monitor and evaluate the FCPF project implementation.

Quantitative Goals

- Full REDD+ readiness status attained in Guyana through extensive stakeholder consultation and participation.
- REDD+ Strategy and Implementation Framework established together with its Environmental and Social Management Framework.
- All REDD+ activities in Guyana are monitored and reported effectively.

Steps Taken or Envisaged to Achieve Action

Guyana joined the World Bank's Forest Carbon Partnership Facility, and submitted its Readiness Plan Idea Note (R-PIN) in 2008 to initiate the REDD+ readiness preparation. In 2011, Guyana became a United Nations REDD Partner Country. In 2012 the government of Guyana prepared and approved its Readiness Preparation Proposal (R-PP) which was submitted to the FCPF that same year. Thanks to parallel activities concerning the development of the national MRVS, Guyana developed and submitted to the UNFCCC its National Forest Reference Level (FRL) for REDD+ in 2014 and a revised Reference Levelin 2015. The activities addressed by the FRL are deforestation from conversion to agriculture, mining, and infrastructure expansion, and forest degradation from timber harvest. The FRL was developed using a Combined Reference Level Approach, in which the average rate of global tropical forest carbon emissions (0.435% / yr) is combined with the rate of annual emissions from forests in Guyana (2001-2012, 0.049% / yr) to obtain a reference level of 0.242%, that results in emissions of 46,301,251 ton CO_2/yr. In 2016, Guyana begun the implementation of the R-PP through the development of REDD+ strategy options, and the reinforcement of its institutional capacity to manage REDD+, including social and environmental safeguards. In 2019, Guyana produced its national REDD+ Strategy, Social Environmental and Strategic Assessment (SESA) and an Environmental and Social Management Framework (ESMF) which underwent extensive stakeholder consultation. With the final readiness Package (R-Package) being developed in August 2020, revised in March 2021, and endorsed in May 2021, Guyana culminated the FCRF REDD+ readiness process.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Institutional capabilities were built and mobilized to ensure successful execution of the R-PP.	Not Applicable	Not Applicable

• Enhanced information sharing and accessibility of information as well as implementation of public disclosure of consultation. • Guyana proposed a REDD+ Strategy in line with its NDC seeking to avoid 48.7 $MtCO_2e$ annually, while maintaining an annual rate of deforestation below 0.1% focusing on the major drivers of mineral mining, forestry, and agriculture, while adopting a principle of promoting biodiversity conservation and enhancement. • The REDD+ strategy was developed in an inclusive, participatory and transparent manner, ensuring multiple opportunities for learning about and influencing the REDD+ strategy design for all affected or interested stakeholder groups. • A Social Environmental and Strategic Assessment (SESA) and an Environmental and Social Management Framework is in place to ensure compliance with the Cancun REDD+ social and environmental safeguards. • Through parallel efforts, Guyana has developed a world-class forest monitoring system (MRVS) that has been independently verified for accuracy by reputable institutions, having produced eleven national assessments (2010 to 2021) to date. Further, Guyana has developed and submitted to the UNFCCC its National FRL for REDD+ in December 2014 and a revised FRL in September 2015.		

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Extent of consultation, participation, and outreach.	FCPF scale (0-5, whereby 5 is completed)	2	5	4
Extent of development of REDD+ Strategy.		0	5	5
Extent of development of REDD+ Implementation Framework.		0	5	4
Extent of assessment of environmental and social safeguards.		0	5	4
Extent of development of Environmental and Social Management Framework.		0	5	4
Stage of REDD+ Readiness.	Qualitative	R-PIN	R-Package	R-Package

Name of Action	Securing a Living Amazon through Landscape Connectivity in Southern Guyana					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2022-2027	Environmental Protection Agency (EPA) / Protected Areas Commission (PAC)	CO_2	Region 9	Forestry

Description and Objective

Under the Amazon Sustainable Landscape Impact Program, this project aims to strengthen and improve landscape connectivity through the establishment of conservation areas (800,000 ha) and the management of productive areas (400,000 ha) within southern Guyana as a method to combat degradation, fragmentation, and unsustainable exploitation of forest resources due to unplanned land-use expansion and unsustainable land/water use from logging and mining sectors, new infrastructure (e.g. roads and trails), and wildlife harvesting. Key project components are four-fold. First, to fortify integrated protected landscape management, whereby focus is placed on the Kanuku Mountains Protected Area (KMPA) to strengthen its management together with the Indigenous communities who utilize resources of the protected area. Second, fortify integrated productive landscapes, whereby focus is placed on strengthening the management of the North Rupununi Wetland (NRW). Third, strengthen policies and incentives for protected and productive landscapes, including the revision of the Protected Areas Act in consultation with all key stakeholders. Fourth, capacity building and cooperation including monitoring and evaluation, communications, and cooperation with the wider Amazon Sustainable Landscapes Impact Program.

Quantitative Goals

- Strengthened protected area management effectiveness.
- Increased areas of forests and watersheds brought under sustainable land and water management practices.
- Strengthened regulatory frameworks for natural resource conservation/sustainable use.
- Strengthened monitoring, evaluation, and cooperation.

Steps Taken or Envisaged to Achieve Action

Approximately 169 persons from the communities of Fair View, Crashwater, Rewa and Apoteri, Iwokrama River Lodge, the North Rupununi District Development Board and the Kanaku Mountain Community Resource Group participated in consultations during November 2019 on barriers, threats, and potential opportunities that may arise as a result of the project. In June 2019, the Global Environment Facility (GEF) Council approved the project concept and the EPA in partnership with WWF-Guyana prepared the project document through extensive project stakeholder consultation so as to secure their maximum input in project design. As of May 2022, the GEF approved project for implementation, whereby Guyana secured a total $5.1 million for implementation.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Kanuku Mountains Protected Area (KMPA) under enhanced management. • North Rupununi Wetland (NRW) implementing and integrated wetland management strategy.	847,406 tons CO_2e	The EX-ACT tool was used to calculate CO_2e reductions. The project is expected to improve practices in 1,800 ha of the KMPA during the lifetime of the project, contributing to 72,489 tons of CO_2e mitigated. It is expected that the project will move at least 1% of the NRW (or 15,128 ha) from very low degradation to no

		degradation over 5 years, which contributes to an additional 774,917 tons of CO_2e mitigated.		
Progress Indicators				
Indicator	**Unit**	**Baseline**	**Target**	**Progress**
Area of protected landscapes created or under improved management for conservation and sustainable use.	ha	0	611,000	0
Area of productive landscapes under improved management practices.	ha	0	901,800	0
Number of community members with built capacities, training, exchanges, and participation in planning processes.	#	0	700	0

3. Cross-cutting

Name of Action	Amerindian Development Fund					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2012-2016	Ministry of Amerindian Affairs (MoAA)	Not Estimated	National	Hinterland Development

Description and Objective

The Amerindian Development Fund (ADF) was established to provide funding to support the low-carbon socio-economic development of Amerindian communities and villages, through the implementation of their Community Development Plans (CDPs) across agriculture, village infrastructure, tourism, manufacturing, village business enterprise, and transportation. The project aimed to strengthen the entrepreneurial and institutional capabilities of the village economies of Amerindian communities; improve linkages with the private sector to further develop value chains; and strengthen institutional frameworks to support local economies in low-carbon socio-economic development.

Quantitative Goals

- Strengthened entrepreneurial and Institutional capabilities of the village economy of Amerindian communities.
- Improved linkages with the private sector to further develop value chains.
- Strengthened institutional framework to support local economies.

Steps Taken or Envisaged to Achieve Action

Phase 1 (2012) of the ADF provided funding to 26 communities and villages in the amount of $753,877 USD for the implementation of their CDPs and capacity development of the Ministry of Indigenous Peoples' Affairs was conducted. Under Phase 2 (2014) of the ADF approximately $3,658,663 USD was disbursed to154 communities and villages for the implementation of their CDPs. In all 154 communities, Community Development Officers (CDOs) were trained in monitoring and financial accounting techniques and Community Management Teams (CMTs) were trained to prepare budgets, financial reports and provided with business management, marketing, and leadership techniques training. Furthermore, Cluster Training Sessions were held for entrepreneurs on cattle management, fish culture, wood working, and business operations, among others. Work was completed to improve linkages with the private sector to further develop value chains and to strengthen the institutional framework to support local communities. As a result, beneficial connections with several agencies and institutions, including the Small Business Bureau (SBB); Guyana Livestock and Development Agency (GLDA); Guyana Tourism Authority (GTA); National Agricultural Research and Extension Institute (NAREI); Regional Democratic Councils (RDCs); New Guyana Marketing Corporation (NGMC); Guyana Technical Institute (GTI); Global Seafood Distributors; Georgetown Chamber of Commerce and Industry (GCCI); and the Guyana Energy Agency (GEA) were made. A CDP database was also elaborated over the life of the project and shared with various agencies and institutions, enlisting all grant recipients, types of CDPs, typologies, villages, tranches disbursed, dates, population, and other particulars. Phase 2 of the ADF project ensured to incorporate key lessons learned from Phase 1 for greater efficiency, impact and sustainability of CDPs, including: (i) community ownership and participation is fundamental to the preservation and respect for Amerindian rights, traditional knowledge and practices, and the implementation of this project; (ii) development of the village economy is critically linked to clustering, marketing, availability of economic opportunities, and other industry linkages, inter alia; (iii) modalities for the disbursement of funds should be mindful of risks, costs and delays in situations where communities cannot use bank accounts; (iv) it is fundamental to ensure access to, and account for the cost of, energy; and (v) logistical costs, risks, weather, and mitigation measures should be fully considered in the planning and delivery of activities.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• 180 Community Development Plans Supported. • 1,253 villagers trained for CDP management teams. • 1,662 low-carbon jobs sustained and/or created. • $4,412,540 USD in value of CDPs funded.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators				
Indicator	**Unit**	**Baseline**	**Target**	**Progress**
Proportion of community ventures financed operational after 1st year.	%	0%	95%	15%
Proportion of CMTs regarded as effective in managing community business.	%	0%	70%	90%
Proportion of CDPs that are financially break-even.	%	0%	40%	13%
Number of partnerships developed in pursuit of community business development.	#	Limited	Several	Several
Number of CMTs trained to develop, manage, and execute business ventures.	#	27	187	154
Proportion of communities that have developed formal linkages between community-level enterprises and larger firms.	%	0%	50%	8%
Extent to which local government agencies are convening and brokering partnerships to support local economic development.	Qualitative	Somewhat involved in project implementation	Fully covering and brokering partnerships	Village leaders fully engaged in discussions

Name of Action	Support for Micro and Small Enterprise and Vulnerable Groups' Low-Carbon Livelihoods					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2012-2018	Ministry of Business (MoB)	Not Estimated	National	Economic Development

Description and Objective

The project addressed two of the major bottlenecks that constrained the development of micro and small enterprises (MSEs) and the ability of vulnerable groups to build alternative low-carbon livelihoods in Guyana, namely (i) limited access to finance and (ii) limited technical and business skills. Access to finance was addressed through (i) a credit guarantee facility covering 40% up to 70% of the collateral requirements for low-carbon venture loans at participating financial institutions; (ii) an interest payment support facility which lowered interests from a range 0f 14-26% down to 6% for entrepreneurs approved for loans for low-carbon ventures; and (iii) a low carbon grant scheme to assist vulnerable persons with viable business propositions in low carbon sectors. A training voucher scheme enabled MSEs to obtain the skills they require at existing training institutions free of cost to them. The project targeted MSEs working in, or transitioning to, 17 low carbon sectors such as: low carbon agriculture and agro-processing; aquaculture; eco-tourism; sustainable business process outsourcing; bio-ethanol; energy efficient transportation and logistics; low carbon manufacturing activities; apiculture; low carbon energy production and/or distribution; sustainable professional and business services; sustainable internet and computer based services; sustainable culture; and sustainable publishing and printing.

Quantitative Goals

- Support carbon emission reductions by re-orienting the economy onto a low carbon path, through the creation of the necessary incentives and creation of jobs in MSEs under key sectors of Guyana´s Low Carbon Development Strategy 2030.

Steps Taken or Envisaged to Achieve Action

A total of 224 loans were approved for beneficiaries (61% males and 39% females) in low carbon sectors at a total approximate value of $4,399,138 USD and 591 grants were approved for entrepreneurs (38% males and 62% females) in low carbon sectors at an approximate value of $891,055 USD. Additionally, 4,482 persons were trained free of cost in several areas, including: basic business management skills, record keeping, packaging and labelling, a special course aimed at female entrepreneurs, climate smart agriculture, sustainable forestry, sustainable mining, videography, photography, cosmetology, cookery, and craft.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• 24 low-carbon loans provided. • 591 low-carbon grants provided. • 2,101 low-carbon jobs sustained and/or created. • 4,482 persons trained in low-carbon sectors. • 17 low-carbon sectors supported. • $4,399,138 USD in value of low-carbon loans provided. • $891,055 USD in value of low-carbon grants provided.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of jobs created in low-carbon sectors	#	0	811	2,101
Number of loans approved to eligible MSEs	#	0	542	224
Number of grants approved to eligible MSEs	#	0	212	591
Number of MSE and vulnerable groups who have accessed technical and business skills	#	0	1,231	4,482

Name of Action	Amerindian Land Titling					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2013-Ongoing	Ministry of Amerindian Affairs (MoAA)	Not Estimated	National	Hinterland Development

Description and Objective

Amerindians total approximately 14% of Guyana's population and currently own more than 15.65% of Guyana's territory, up from about 6% in the early 1990s. The Amerindian Land Titling (ALT) project seeks to enable Amerindians to secure their lands and natural resources with an overall goal towards sustainable self-driven socioeconomic development. The ownership of land empowers and allows Guyana's first peoples the liberty to engage in and promote investments towards their own social and economic advancement in a sustainable low-carbon manner. It is envisaged that titling of communities will strengthen land tenure security and expand the asset base of Amerindians, enabling improved long-term planning for their future sustainable development. The objective of ALT project is to facilitate and fast track the Amerindian Land Titling process. The project seeks to (i) have land titles issued and demarcation process completed for all Amerindian villages that submit requests, including those that request extensions; (ii) strengthen existing mechanisms to deal with unresolved land issues; and (iii) improve the communication and outreach efforts of the Ministry of Amerindian Affairs.

Quantitative Goals

- Land titles issued and demarcation process completed for all Amerindian villages that submit requests.
- Increased access to existing and alternative mechanisms for resolving land titling disputes.

Steps Taken or Envisaged to Achieve Action

The principle of Free Prior and Informed Consent (FPIC) is a fundamental and respected principle that is applied to ensure Amerindians are provided with enough information well in advance of planned or proposed activities to allow communities and villages to agree or consent to the execution land titling. To date, over 210 persons were trained in FPIC to ensure that not only do Amerindians understand their rights but importantly, for other stakeholders to recognise and understand those rights and practically apply the principle of FPIC during project implementation. A communication strategy was formulated under the project and associated activities involved the distribution of communication materials (including brochures and flyers, radio and television broadcasts), documentaries on titling activities, and workshops throughout communities and villages in the various regions. Many of the communication materials were translated into the different Amerindian languages. A grievance redress mechanism was established as an alternative for helping to resolve land titling disputes. A total of 23 persons have been trained as GRM liaisons, 254 community members have been trained in mediation and 378 persons were part of cluster awareness exercises on the core function of the GRM. To date, a total of 15 villages have issued with absolute grants, bringing the total number of Amerindian villages titled with absolute grants to 111. A total of 26 villages have been demarcated and 24 were issued with certificates of title, which has brought the total number of villages in Guyana demarcated and issued with Certificates of Titling to 101.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• 111 villages with absolute grants. • 101 villages demarcated and issued certificates of title.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of villages issued absolute grants.	#	96	All	111
Number of villages issued certificates of titling.	#	77	All	101
Number of persons trained in mediation under FPIC.	#	0	210	210

Name of Action	ICT Access and E-services for Hinterland, Remote, and Poor Communities					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Ongoing	2017-Ongoing	Office of the Prime Minister (OPM)	Not Estimated	National	Hinterland Development

Description and Objective

The objective of the project is to provide the necessary infrastructure, equipment, hardware, and software necessary to enable access to high-quality Information and Communications Technology (ICT) connectivity and accompanying electronic services to 200 Hinterland, Poor, and Remote Communities (HPRCs) across Guyana, as well as to provide capacity building for communities in the use of newly developed e-services. It is envisaged that the project will provide the supporting capacity to create linkages to generate inter-sectoral benefits in education, health, and business while fostering low-carbon technologies. The goals of the project include the development of a digital knowledge-based society, enhancement of national efficiency and competitiveness and the promotion of inclusive and sustainable growth and development.

Quantitative Goals

- Strengthened e-government policy environment and legislation.
- Increased broad access to ICT among hinterland, poor, and remote communities.
- Public e-services and information readily available to HPRCs.
- Enhanced capacity of HPRCs to use ICT and access e-services.

Steps Taken or Envisaged to Achieve Action

From 2021, ICT hubs are being established to benefit 200 communities and villages across Guyana, each equipped with printers, televisions, laptops, and software. To achieve this target, 90 Very Small Aperture Terminals (VSATs) were procured and installed in communities and villages to provide internet access to remote locations. Additionally, 180 solar systems were procured to provide the necessary energy to power the ICT equipment at the hubs and any additional equipment/appliances using the extra capacity, based on 100% renewable energy. Also, under the project, consultancies were commenced to conduct a comprehensive capacity assessment of the National Data Management Authority (NDMA); map current ICT deployment and capacities in the public sector; and to undertake a multidimensional capacity assessment of public institutions that will offer e-services, identifying gaps and bottlenecks in the process. The following reports were completed: i) Baseline Report focused on market research looking at Guyana's profile, education, health, business, and as-is analysis of technical infrastructure and regulation; ii) Technical Report looking at technology assessment, design options for Guyana, commercial assessment of solutions, proposed Guyana solution, rollout phases, stakeholder analysis, business models, implication for legislation and policy development, and an implementation plan, and iii) E-Services Readiness Assessment Report on important service needs, status quo of e-services readiness today, vision of e-services offered by government agencies, and description of selected e-services. Several communities have already benefited from the rollout of this project, specifically regions 9 and 7. A photovoltaic technician training programme was also completed as to build technical capacity within these HPRCs. A massive ICT training rollout will soon commence within these communities where a basic to advanced curriculum will be employed. These specific interventions will enhance the communication deficit within these communities, improve remote health and education management (including the Guyana Online Academy of Learning 20,000 scholarship programme) and access to government eservices.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• 200 HPRCs with ICT Hubs. • 4,000laptops installed. • 200 e-services provided.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators				
Indicator	**Unit**	**Baseline**	**Target**	**Progress**
Proportion of residents in HPRCs with access to ICT.	%	20%	90%	98,000 residents
Number of ICT hubs deployed in HPRCs.	#	14	200	200
Proportion of people in HPRCs using e-services.	%	0%	90%	98,000 residents
Number of online services offered by public institutions to HPRCs.	#	Limited	200	NE
Proportion of residents in HPRCs trained in ICT.	%	Limited	85%	NE

Name of Action	Village Sustainability Plans					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Enabling activity	Ongoing	2021-2025	Ministry of Amerindian Affairs (MoAA) / National Toshaos Council (NTC)	Not Estimated	National	Hinterland Development

Description and Objective

Under the Low Carbon Development Strategy 2030 (LCDS 2030), Guyana aims to lead sustainable development at village level with clear strategy in a continuous, predictable, and sustained manner. A dedicated 15% of carbon market revenues in Guyana (under the ART-TREES mechanism) are made available for bottom-up investments in the implementation of community-led low-carbon development programmes for indigenous peoples and local communities (IPLCs) set out in Village Sustainability Plans (VSPs), put together by communities themselves focused on sustainable income generation and socioeconomic upliftment to deliver on climate, energy security, and food security priorities. The VSPs are developed by the villages themselves under the principles of free, prior, and informed consent (FPIC) and should cover the period up to 2025 (or longer if the village choses), whereby the Government of Guyana and non-governmental organizations may aid villages in VSP preparation if this is requested. Because VSPs are led by villages, their specific format and content vary, but typically include a decision statement for the community and priority areas to deliver the vision including community infrastructure and communications (clean energy and ICT), livelihood opportunities (ecotourism and climate-smart agriculture), natural and environmental management, education, and health.

Quantitative Goals

- Operational benefit-sharing mechanism to direct 15% of carbon market revenues in support of bottom-up investments in the implementation of community-led low-carbon development programmes for indigenous peoples and local communities set out in Village Sustainability Plans.

Steps Taken or Envisaged to Achieve Action

The National Toshaos Council (NTC) is established by law under the Amerindian Act of 2006 and comprises all elected Toshaos of Guyana across its ten regions. In July 2022, the NTC adopted a resolution in support of Guyana´s LCDS 2030. The NTC's participation was crucial in developing/proposing the benefit-sharing mechanism for dedicating 15% of carbon market funds such that all IPLCs could benefit equitably. A seven-month-long nation-wide consultation was done with over 200 Indigenous communities on the LCDS carbon credits benefit-sharing mechanism, conducted between November 2021 and June 2022. The NTC spearheaded the process of developing the outline Village Sustainable Plan (VSP) templates and guides by which communities were able to develop their VSPs for participating in the benefit-sharing programme. The NTC was also fully involved, in collaboration with the Ministry of Amerindian Affairs and LCDS Secretariat, in determining the key documents that needed to be submitted by the communities along with their plans, response letters to villages, development of Terms of reference for Finance and Planning Committee, and Finance Officer job descriptions. For the previous and current ART-TREES commitment periods, the village leadership have been invited to consult with members of the community to agree whether to participate in the benefit-sharing mechanism, and if so, to produce an Outline VSP by the end of 2022, and finalize and submit the completed Village Sustainability Plan by the end of June 2023, following the local decision-making processes of each village. In this process, the NTC supported and trained several villagers in the preparation of their outline VSPs across Regions 1, 2, 3, 4, 7, and 9. As of August 2023, 241 villages have produced their village plans, out of a total of 242 IPLCs in the country. In 2023, a total of $22.5 million USD was disbursed to designated Village Bank Accounts from Guyana's first commercial sale of carbon credits to Hess Corporation. Further work is ongoing for the continuity of the programme.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• 242 IPLCs with Village Sustainability Plans.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

• 15% of carbon market benefits invested in community led low-carbon sustainable development initiatives.		

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Number of IPLCs with VSPs.	#	0	242	241
Proportion of revenues from Guyana´s carbon market invested in VSPs.	%	0	15%	15%
Cumulative disbursements to VSPs from Guyana´s carbon market.	$ USD	0	To be determined	22.5 million

Name of Action	Strengthened Monitoring, Enforcement and Uptake of Environmental Regulations in Guyana's Gold Mining Sector					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2014-2017	Environmental Protection Agency (EPA) / Guyana Geology and Mines Commission (GGMC)	Not Estimated	National	Economic Development

Description and Objective

The main driver of deforestation and forest degradation in Guyana is mining, which leads to increased carbon emissions, as the impacts of uncontrolled mining on carbon stocks are believed to be comparable to the degradation of high forest to scrub/savannah, that is, approximately 200 tonnes of carbon per hectare. The objective of the project to reduce ecosystem loss and ecosystem functionality in priority small- and medium-scale gold mining operations through a two-prong approach tackling the sector´s main barriers encompassing noncompliance with mining-related environmental regulations and illegal mining; insufficient personnel and institutional capacity to enforce the environmental regulatory framework; and insufficient capacity to implement environmental codes of practice among miners. The first approach was to strengthen monitoring and enforcement of mining-related environmental regulations and codes of practices, by increasing capacity of EPA and GGMC staff and fortifying inter-institutional coordination mechanisms for enhanced monitoring and enforcement of priority areas, including the improvement of regulations and codes of practice and satellite tracking mechanisms. The second approach was to build capacities and promote uptake of conservation practices by miners.

Quantitative Goals

- Strengthened enabling environment for monitoring and enforcement of mining-related environmental regulations and codes of practice.
- Enhanced capacities for uptake of mining practices that promote conservation.

Steps Taken or Envisaged to Achieve Action

A joint compliance unit for small- and medium-scale mining and a functioning Natural Resources Advisory Committee (NRAC) was established, which has proven useful for its influence on a cabinet decision and initiating bridges for joint work on compliance with non-state actors. Key tools were developed including simplified codes of practice for GGMC staff and practitioners and environmental monitoring check lists for both EPA and GGMC. The project revised and simplified the mining codes of practice; produced learning materials; created Standard Operating Procedures (SOPs), and checklists for joint monitoring; implemented a legal review with EPA; undertook a mining school institutional review, produced a proposed curriculum and developed and disseminated simplified learning materials and public awareness tools. Furthermore, close work was conducted with the Guyana MRVS to access satellite imagery for GGMC and EPA officers to support tracking of environmental infractions or illegal mining.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Increased monitoring and enforcement capacities leading coupled with enhanced awareness to decreased number of environmental infractions and/or illegal mining contributing to lower deforestation and lad degradation rates among small and medium gold mining operations.	Not Estimated	Insufficient information available to estimate the GHG emission reductions.

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Level of capacity of GGMC and EPA to enforce mining-related environmental regulations and codes of practice for small and medium scale gold mining.	UNDP capacity score	0	1	2

Area monitored for compliance with EPA mining-related environmental regulations.	ha	0	50% over baseline	629,304
Area monitored for compliance with GGMC mining-related environmental regulations.	ha	0	50% over baseline	755,693
Proportion of total high priority areas monitored using satellite tracking.	%	0	75	75
Number of courses or seminars implemented through Mining School that integrate environmental considerations.	#	1	5	5
Proportion of miners observed by field officers who are complying with the environmental regulations and codes of practice.	%	0	30	36
Proportion of small and medium scale gold miners participating in project seminars who report an increased awareness of mining related environmental regulations.	%	0	75	100

Name of Action	Caribbean Renewable Energy Development Programme					
Type of Action	**Status**	**Duration**	**Implementing Entity**	**GHG Coverage**	**Geographic Scope**	**Sectoral Scope**
Project	Completed	2004-2015	Caribbean Community (CARICOM)	CO_2	Regional	Power Generation

Description and Objective

This project aims at removing barriers to renewable energy utilisation in the Caribbean. Through specific actions to overcome policy, finance, capacity, and awareness barriers it is estimated that the contribution of renewable energy sources to the region's energy balance will be significantly increased. At the time, renewable energy provided less than 2% of the region's commercial electricity. It is estimated that due to the planned barrier removal activities the share of renewable energy could reach 5% by 2015. This would imply annual reductions of CO_2 emissions by some 680,000 tons. The project activities concentrate on: (1) strengthening of regional energy sector institutions; (2) government advisory with regards to Renewable Energy (RE) and Energy Efficiency (EE) policies; (3) preparation of RE and EE projects for investment decisions; (4) capacity building activities and public awareness campaigns. Participating countries: Antigua and Barbuda, the Bahamas, Barbados, Belize, British Virgin Islands, Cuba, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Suriname, Trinidad and Tobago and Turks and Caicos. Apart from reducing GHG emissions, the project has the following development objectives:

- Establish the foundation for a sustainable renewable energy industry; and
- Create a framework under which regional and national renewable energy projects are mutually supportive.

Quantitative Goals

- Mitigate GHG emissions from the use of fossil fuels in the Caribbean by removing barriers to the utilisation of renewable energy.

Steps Taken or Envisaged to Achieve Action

To achieve the project objectives, several project activities are designed and divided into four groups as follows:

- Supporting the implementation of policies, legislation and regulations that create an enabling environment for renewable energy development;
- Demonstrating innovative financing mechanisms for renewable energy products and projects and building the capacity of financial institutions and renewable energy firms in their application;
- Building the capacity of selected players in the renewable energy field; and
- Putting in place an improved regional renewable energy information network.

Estimated Outcomes	Estimated GHG Emission Reductions	Methodologies and Assumptions
• Remove the barriers to increased use of renewable energy in the Caribbean thus reducing the Region's dependence on fossil fuels.	Not Applicable	Not Applicable

Progress Indicators

Indicator	Unit	Baseline	Target	Progress
Percentage of renewable energy in commercial energy use.	%	NA	NA	NA
National targets for renewable energy defined RE integrated into utility planning.	#	NA	NA	NA
Establishment of power purchase agreements for RE projects.	#	0	NA	NA
Investment resources leveraged directly by the project.	USD	0	NA	NA
Total amount invested in RE projects in the region.	USD	NA	NA	NA
Number of participants in different capacity building initiatives related to RE.	#	0	NA	NA

Supply of RE related training in the region.	#	0	NA	NA
Number of users accessing the information system.	#	0	NA	NA
Availability of updated RE information in the region.	#	0	NA	NA


ONE PEOPLE
ONE NATION
ONE DESTINY