

# GUYANA'S LOW CARBON DEVELOPMENT STRATEGY 2030

DRAFT FOR CONSULTATION  
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## **FOREWORD FROM THE PRESIDENT OF THE COOPERATIVE REPUBLIC OF GUYANA, H.E. DR. MOHAMED IRFAAN ALI**

We live at an exciting time for our country. A fair, inclusive, sustainable, and prosperous Guyana is within reach. Yet, such a future is not guaranteed or pre-determined – it will only become real through hard work and the choices we make as a country, working together as “one Guyana”.

This Low-carbon Development Strategy – the LCDS 2030 – sets out a vision for rising to the challenge. The current and first draft is intended as the basis for a national consultation on how we can re-double our efforts to build a low-carbon economy in Guyana – through low-carbon energy; employment and development opportunities for all sections of our society; a transformation of digital, marine and transportation infrastructure; and massive investment in adapting to the impacts of climate change. The LCDS 2030 also sets out how we can build a platform for the economy of the future – a low-carbon economy – where our world-class forest, biodiversity, water and marine resources are valued for the vital contribution they make to the health of our planet.

The LCDS 2030 continues to propel Guyana on a pathway started in 2008, when we were the world’s first developing country to publish a Low-carbon Development Strategy. All Guyanese should take pride in the scale of vision we set out then and reflect on the significant progress that was made since, as outlined in this document.

We can now move to the next stage, which includes expansion of the work we started on creating a global model for valuing forests, in partnership with the Government of Norway from 2009. The potential this offers our people is outlined in this document, but no binding commitments will be entered into before the national consultation is complete, and the final LCDS 2030 is tabled in the National Assembly.

As we learn from lessons to date and identify new ways to move forward, Guyana will stay involved in global efforts to address climate change in line with the Paris Climate Agreement. We will continue to call for international action commensurate with the overarching target of the Agreement - to stabilise global temperatures at 1.5 degrees above pre-industrial levels.

As part of these efforts, we will manage our own oil and gas sector responsibly for the benefit of all Guyanese: ensuring that our people achieve their legitimate development aspirations while decarbonising our economy at home and being at the forefront of promoting solutions for the needed global transition towards decarbonisation of the world's economy. We will continue to advocate for policies such as international carbon pricing and the removal of fossil fuel subsidies. These policies are needed to accelerate global efforts to ensure that the targets of the Paris Climate Agreement are met through a global transition that is driven by science, economics, and fairness.

The end of 2021 and early 2022 are an important period for the world in looking at both climate and biodiversity. There will be critical Conferences of the Parties (or COPs) to two international treaties — the United Nations Framework Convention on Climate Change (UNFCCC) whose COP is in Scotland in November 2021, and the United Nations Convention on Biodiversity (UNCBD) whose COP is in China in April and May 2022. At both COPs, Guyana will be advocating for greater global ambition. Their outcomes will become important complements to the national consultation on the LCDS 2030.

So between now and the end of February 2022, I urge all Guyanese to become familiar with the LCDS 2030 and to share your views on its contents - whether you are interested in all its measures or only in some. In particular, I hope our young people will engage to offer ideas. They now have the chance to enjoy a future that those who came before could only dream of, so I hope that our youth will engage with the energy and innovation they have in abundance.

After the national consultation is completed, the LCDS will be finalised and then tabled in the National Assembly.

For many years, Guyana has been recognised for our global leadership on climate and forests. Our efforts throughout this time have not been about meaningless slogans or suggesting that there are easy solutions to global problems. Rather, Guyana has been about harnessing imagination, innovation and hard work to align the legitimate development aspirations of our people with the global challenge of climate change.

We can build a future where we advance Guyana's development for all our people and at the same time, secure and maintain our commitment to low-carbon development.

# A NEW LOW-CARBON ECONOMY

*“The LCDS is a framework intended to map the path of a new growth trajectory in a non-polluting way. Tropical forest countries have long called for the ecosystem services provided by the world’s standing tropical forests to be properly valued, through both public and private finance. This will enable people who live in forests and forest countries to create jobs and economic opportunity from an economy that works with nature, instead of today’s reality where forests are often worth more dead than alive.” — President of Guyana (2009)*

## EXECUTIVE SUMMARY

### A Global Model Since 2009

In 2009, Guyana launched the first Low-carbon Development Strategy (LCDS) from a developing country, setting out a vision for inclusive, sustainable development, while simultaneously maintaining the country’s forests, about 85% of the country’s territory, to help meet some of the most urgent challenges the world faces.

Guyana has the second highest percentage of forest cover on earth and is working with partners to sustain 99.5% of that forest while building the foundation for a new low-carbon, ecosystem economy. The expected opportunity to access a market mechanism for forest climate services, and other ecosystem services, will enable Guyana to store 19.5 billion tons of carbon dioxide equivalent (the measure used for greenhouse gas emissions – the world emits about 50 billion tons a year). At the same time, Guyana can grow its economy five-fold over 20 years and keep energy emissions flat; invest in Amerindian, Hinterland and sustainability planning; protect the coast and Hinterland from climate change; create jobs; and integrate Guyana’s economy with its neighbours. Guyana will stay true to the vision set out in 2009 which is to create a model low-carbon economy for the world.

Since then, the country has gained a greater understanding of the outsized contribution that Guyana’s ecosystems make to the world’s health and economy, as well as its role as one of the world’s most important countries for biodiversity conservation:



- Guyana has maintained the second highest percentage of forest cover on earth, with more than 99.5% of the forest's 18 million hectares remaining. Deforestation rates are among the lowest in the world and Guyana is one of only four countries in the world (and one of only two in the Amazon Basin) verified to have sustained a High Forest Low Deforestation (HFLD) state.
- Guyana is one of four countries which host the Guiana Shield, one of the most pristine rainforest landscapes in the world. The Guiana Shield stores around 18% of the world's tropical forest carbon and 20% of the world's fresh water.
- The country has extremely high levels of biological diversity and endemism. It is home to approximately four percent of known animal species, including the following iconic Amazonian species: jaguar, giant river otter, harpy eagle, tapir, giant anteater, and giant armadillo. There are more bird species in Guyana than the entire United States of America. The country is also home to 2.4% of known plant species—and unique tepui and natural savannahs give Guyana exceptionally high levels of endemism. It also maintains a percentage of littoral forest in the coastal area.
- Guyana's ocean area – more than half of Guyana's terrestrial area – offers a new frontier for sustainable development through the expansion of the Ocean/Blue Economy.

Estimates of the economic value that Guyana's eco-system services provide to the world are considerable.

Guyana's forests alone provide value that is estimated to range from US\$40-US\$54 billion annually. Yet, this value is not recognised in monetary terms. By contrast, jobs and economic value can be generated by clearing forests for agriculture, mining, infrastructure, and other uses. This is a global problem and one of the reasons that the world's tropical forests are worth more dead than alive and forest areas that are the size of Greece disappear each year, causing about 16% of global greenhouse gas emissions.

As one of nine countries/territories in the Amazon Basin, Guyana, since 2009, has sought to address this challenge by creating a global model for promoting broad-based economic development while also avoiding the deforestation-led development path followed by countries all over the world. The then President of Guyana, Dr. Bharrat Jagdeo, set out a vision for the first LCDS, and called for international partners to work on three inter-linked objectives:

- Create new economic incentives: how to make forests worth more alive than dead.
- Stimulate future growth using clean energy and non-deforesting economic activities.
- Protect against climate change.

The means to advance these objectives were set out in the first draft LCDS which underwent one of the most extensive national consultations in Guyana's history before being finalised. The 2009 LCDS, and a 2013 update were overseen by the Multi-Stakeholder Steering Committee (MSSC) and combined national plans for investment with calls for international action on climate change.

## The Guyana-Norway Partnership

Recognising that the first objective of the LCDS required international action, Guyana sought partners who shared the country's vision. In 2009, Guyana and Norway agreed to work together to create a model for how progress on economic incentives for forests could be made. President Jagdeo and Norway's Minister of the Environment and International Development, Mr. Erik Solheim, signed an agreement where Norway would provide Guyana with result-based payments for forest climate services, alongside cooperation between the countries in the fight against climate change, the protection of biodiversity and the enhancement of sustainable development.



For the period 2009 to 2015, Guyana earned US\$212.52 million in payments, to be invested in the LCDS. This has created low-carbon jobs, enabled Amerindian villages to receive legal title for communal lands, rehabilitated the Cunha Canal to protect against flooding, and started to equip Amerindian and hinterland communities with renewable energy, digital infrastructure, and sustainable livelihood opportunities. Crucially, Guyana and Norway cooperated to build a world-leading forest Monitoring, Reporting and Verification System (MRVS) which enables Guyana to move to the next stage of the LCDS with partners who share its vision for climate and biodiversity.





# TOWARDS 2030 THE NEW LCDS

The new LCDS 2030, as outlined in this draft for consultation, focuses on harnessing Guyana's unique advantages to create a new low-carbon economy, built on the platform provided by the MRVS and other areas of enhanced capacity in Guyana. Since 2009, Guyana also ratified the 2015 Paris Climate Agreement, under which 197 countries — including Guyana — agreed to pursue development pathways that are aligned with stabilising global temperatures at 1.5 degrees Celsius above pre-industrial levels.

LCDS 2030 will create a new low-carbon economy in Guyana by establishing incentives which value the world's ecosystem services, and promoting these as an essential component of a new model of global development with sustainability at its core. In Guyana's case, harnessing the value of the country's ecosystem services can build a long-term, low-carbon diversification opportunity.

The three objectives set out in 2009 continue to provide a guiding framework and have been enhanced based on knowledge gained since then, as well as new opportunities created by international progress. This LCDS Draft for Consultation addresses these objectives:

- **Forest Climate Services and other Ecosystem Services:** From early 2022, there is a strong possibility that Guyana can access market-based mechanisms for forest climate services that includes private, as well as international public sector financing. This will enable a pathway to transition from the existing Guyana-Norway partnership and increase the value of sustainably managing Guyana's forests. The MRVS system, built since 2009, will also act as a platform for integration with other ecosystem services markets.
- **Stimulate future growth through clean energy and sustainable economic activities:** Guyana can undergo one of the world's most ambitious energy transitions and grow the economy up to five-fold, while keeping greenhouse gas emissions from energy generation at around 2019 levels. This can be done

through the replacement of expensive, polluting heavy fuel oil with natural gas as a bridge to an energy system built mainly from hydropower, solar and wind power. Alongside the national low-carbon energy transition, targeted investments can be made in the underlying infrastructure of a broader, low-carbon economy to create jobs all over the country and enhance livelihoods. This includes investments to enhance digital connectivity in under-served communities, to improve transportation, improve access to finance, and create micro and small, low-carbon enterprises. It also includes targeted support for Amerindian and other forest-dependent communities, with a dedicated 15% of revenues from forest climate services adding to other investments for Amerindian communities. The development of the Ocean Economy is a further priority - to bridge the land-ocean nexus via low-carbon growth. This will include areas such as fishing, ocean biodiversity and mangroves, and shipping and transport.

- **Protect against climate change:** Global wellbeing continues to be damaged by climate change, including in Guyana where extreme weather events are destroying livelihoods and damaging the economy. Early 2021 saw catastrophic flooding, the social and economic damage is likely comparable to the 2005 flood which affected close to 37% of the population and caused economic damage equivalent to 60% of GDP. The Hinterland also experiences drought conditions, including a very serious episode in 2015.

Apart from the three objectives carried forward from the 2009 LCDS, the LCDS 2030 introduces a fourth objective:

- **Align with global climate goals:** Since the production of the 2009 LCDS, Guyana has discovered oil and gas, which has transformed the country's development prospects. Guyana will act strategically and responsibly as the sector develops, supporting global energy security while diversifying and decarbonising Guyana's domestic economy and investing in development priorities for all Guyanese, including health, education and low-carbon opportunities. At the same time, the Government will advocate internationally for a strong global carbon price and the removal of subsidies on fossil fuel – to incentivise the lowest carbon, most cost-effective oil and gas in the global marketplace in line with the goals of the Paris Climate Agreement under which there will be demand for decades to come. In parallel, Guyana will advance a “no flaring” policy, and mandate the use of best technology in the Oil and Gas sector to limit its environmental impact.

The LCDS 2030 sets out how to accelerate the achievement of these four objectives. In determining how to do this, planning for sustainable development is the core principle that guides the LCDS 2030. This means promoting development and stimulating future growth for all Guyana's people through a balance across:

- **Human Capital:** Ensuring that Guyanese citizens achieve greater health, education and other social outcomes.



- Financial Capital: Ensuring equitable access to finance for all, whether seeking to invest in start-ups, expand existing businesses or cope with unexpected external shocks.
- Physical Capital: Upgrading Guyana's energy, transportation, digital, water, and housing infrastructure on a low-carbon, non-polluting trajectory.
- Natural Capital: Introducing mechanisms to sustain Guyana's world-class natural capital to enhance quality of life for all Guyanese and deploy natural capital as part of solutions to global problems, including climate change, biodiversity loss and deteriorating water resources.

All of these areas will be explored and advanced as part of the LCDS national consultation to ensure that the vision contained in this new version of the LCDS responds to the needs and aspirations of the citizens of Guyana. This includes the coastal population and particularly, those communities that reside in forest and/or depend on forest resources for economic livelihoods. This LCDS is a draft to gather input and ideas from all Guyanese and will be subject to national consultation in late 2021 and early 2022. A final version will be tabled in the National Assembly before June 2022. In this draft:

- **Chapter One** looks at the building blocks for the new low-carbon economy: forest climate services, biodiversity, water management and the Ocean Economy.
- **Chapter Two** outlines how forest climate services can be evolved because of the capabilities Guyana has built, and the potential of integrating with the emerging voluntary carbon markets.
- **Chapters Three and Four** summarise Guyana's new LCDS Investment Programme to develop Guyana's human, financial and physical capital. Chapter Three focuses on a low-carbon energy transition and Chapter Four focuses on wider social and economic investments.
- **Chapter Five** addresses how Guyana will protect against climate change.
- **Chapter Six** addresses sustainable management of the oil and gas industry.
- **Chapter Seven** sets out the plans for the oversight of this LCDS by a national consultation, the National Assembly and the Multi-Stakeholder Steering Committee.
- **Appendix One** provides background on the definition and valuation of Guyana's forests.
- **Appendix Two** summarises ART-TREES.
- **Appendix Three** highlights the achievements under the Guyana-Norway Partnership.

# GUYANA'S LOW-CARBON DEVELOPMENT STRATEGY 2030

## Create New Incentives for a Low-Carbon Economy

### Sustainability Planning

- Forestry
- Biodiversity
- Water Resources
- Ocean/Marine Resources

## Protect against Climate Change and Biodiversity Loss

### Climate Adaptation and Resilience

- Climate Resilient Agriculture
- Climate Risk Assessment & Insurance
  - Coastal Infrastructure
- Mangroves Restoration and Expansion
  - Drought and Flood Management



## Stimulate Future Growth: Clean Energy and Low-carbon Development

### Green Jobs and Sustainable Livelihoods

- Clean and Renewable Energy
- Ocean Economy Opportunities
- Digital Infrastructure
- Low-carbon Transportation

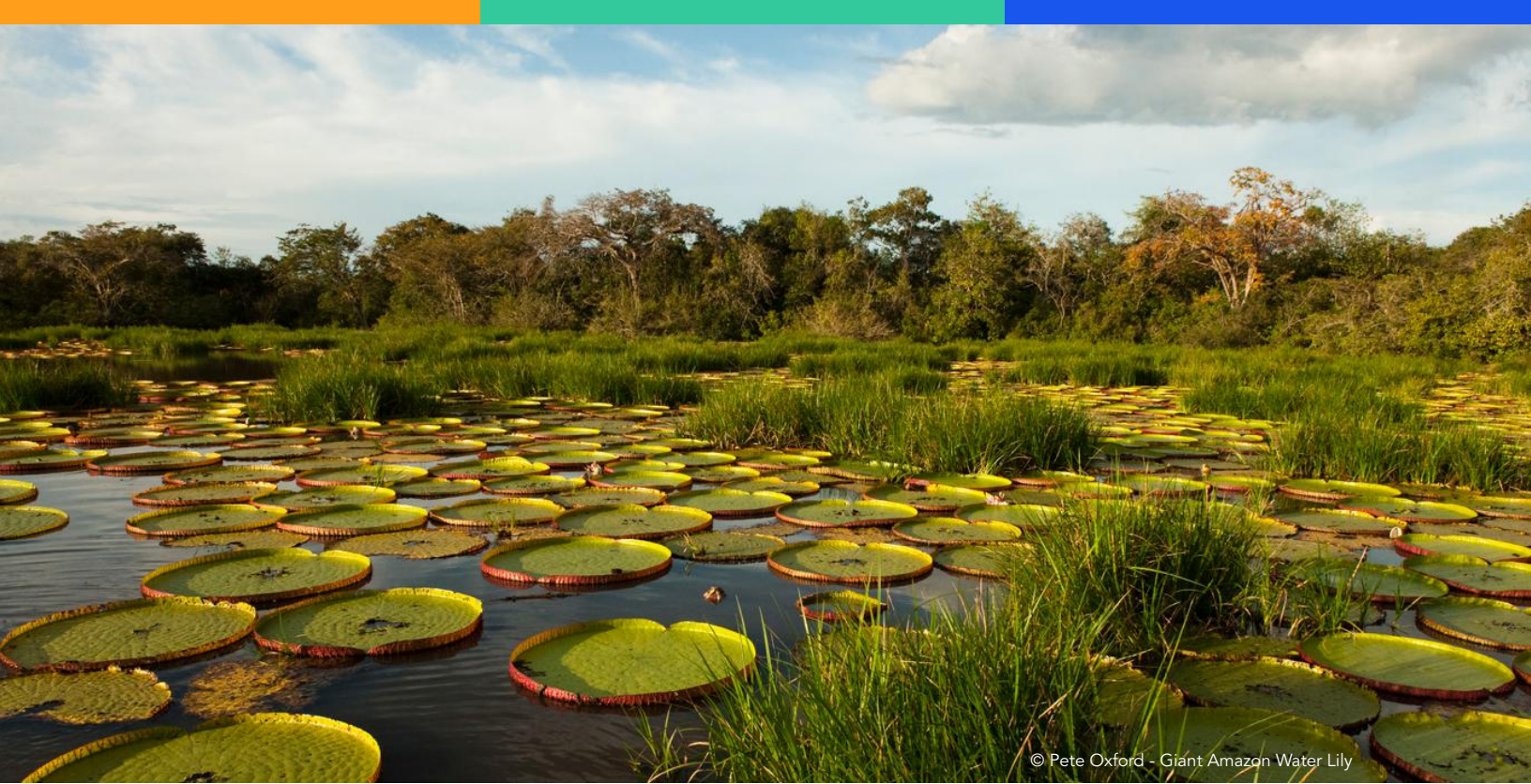
## Align with Global Climate and Biodiversity Goals

- UN Sustainable Development Goals
  - Nationally Determined Contributions
- Aichi Targets on Protected Areas
  - Leaders Pledge for Nature
    - UN: Net Zero by 2050



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© Pete Oxford - Giant Amazon Water Lily

# CHAPTER ONE:

## TOWARDS 2030 – THE NEW LOW-CARBON ECONOMY

Guyana will create an ecosystems economy which balances the following: **low-impact mining and forestry** to enhance employment and income generation opportunities; **forest climate services** through which the value provided by Guyana’s forests to the world is recognised; **Guyana’s next generation of ecosystem services** such as water management, and biodiversity protection. Protected Areas will be expanded, and partners will be sought for the International Center for Biodiversity Research.

Developing a sustainable Ocean Economy is crucial for Guyana in its management of its rich ocean resources; growing commercial fishing sector; emerging shipping and logistics industry, and ecotourism programmes. This theme is linked to the Low-carbon Economy and Ecosystem Services as the Ocean Economy is not just about market opportunities, but it also provides for the protection and development of more intangible ‘blue’ resources such as traditional ways of life, carbon sequestration, and coastal resilience to help mitigate the often devastating effects of climate change.

## Approaches to Sustainable Forestry and Low-Impact Mining

Guyana’s forests are vital assets in the global fight against climate change. However, the forests also serve a multitude of other functions, including generating employment and income through the forestry, agriculture, and mining sectors. Further, the forests — along with other parts of Guyana’s territory — have many significant ecosystem services beyond



carbon/climate. However, historically only the extractive activities generate employment and economic value - both forestry and mining are vital sectors to Guyana's economy:

- **Forestry** - Guyana's forestry sector accounts for approximately US\$40 million to US\$60 million in export value annually and employs over 20,000 persons. There are 17 large concessions in Guyana and 580 small concessions, all of which are leased to and operated by community forest operators and private individuals/companies. The State holds no equity or other management interest in any forest concession. The Government, through the Guyana Forestry Commission, monitors and regulates the activities of forest concessions to ensure that strict sustainable forest management rules and guidelines are implemented, and that forest legislation is implemented effectively by operators.
- **Mining** - Guyana has a long history and tradition of mining, and remains one of South America's largest mineral producers and exporters. The mining sector contributed 16% of Guyana's GDP and 56.4% (US\$1,017.1 million) of Guyana's export earnings. Along with the quarrying sector, the mining sector employs an estimated 12,000 - 18,000 Guyanese (approximately 4% - 6% of Guyana's total workforce). In 2019, the value of output from the mining sector was approximately G\$211.1 billion, with exploration focusing mainly on gold, diamond, bauxite, loam, manganese, oil and sand. Guyana has maintained low levels of deforestation throughout mining extraction activity over the years, with the independently verified deforestation rate never exceeding 0.079% at peak price and production levels. With decades of extraction in the mining sector to date, Guyana has maintained over 99% of its forest cover with this vast expanse of forest area recorded as intact forests. The LCDS will continue to prioritise the strengthening of measures for low-impact mining, rehabilitation and restoration of mined-out areas, and improved transparency in the sector.

As such, achieving the right balance between potentially competing developmental models is one of the core challenges faced by the country. To achieve this balance in the coming years, Guyana will advance:

- **Sustainable Forestry and Low-Impact Mining Practices:** This will enhance employment and income generation opportunities through domestic regulation and linking with global market standards.
- **Forest Climate Services:** As the first capability for Guyana's ecosystem services, work will be advanced to underpin the Monitoring Reporting and Verification System (MRVS) and Safeguard Information System (SIS) that support REDD+ and ART-TREES, while also creating the right legal and policy frameworks for individual projects, including reforestation and reclamation in mined-out areas.
- **Ecosystem Services:** Preparing to expand the range of ecosystem services that can become part of global nature-based solutions, beyond carbon. This may entail partnerships from Indigenous Peoples and local communities, local business, government, and international stakeholders.

# Approaches to Sustainably Growing the Forestry and Extractive Sectors:

SUSTAINABLE FORESTRY AND LOW-IMPACT MINING	FOREST CLIMATE SERVICES	ECOSYSTEM SERVICES
<ul style="list-style-type: none"> <li>• Finalise and Implement Voluntary Partnership Agreement under EU-FLEGT</li> <li>• Implement Programme for Endorsement of Forest Certification (PEFC)</li> <li>• Expand local value chain for wood products</li> <li>• Improved planning and recovery in mining areas</li> <li>• Implement Mineral Mapping</li> </ul>	<ul style="list-style-type: none"> <li>• Sustain Monitoring, Reporting and Verification System (MRVS) for REDD+ and ART-TREES</li> <li>• Implement Safeguard Information System for REDD+ and ART-TREES</li> <li>• Create Policy and Legal Framework for project-level climate services, including framework for private sector-led reclamation and reforestation programmes</li> </ul>	<ul style="list-style-type: none"> <li>• Expansion and protection of Guyana's mangrove forests</li> <li>• Maintain Intact Forest Landscapes</li> <li>• Biodiversity Conservation and Protection</li> <li>• Watershed Management</li> <li>• Examine green-grey solutions (engineered infrastructure/mangroves)</li> <li>• Strengthen and expand Guyana's Protected Area System</li> <li>• International Center for Biodiversity Research</li> </ul>



# SUSTAINABLE FORESTRY AND LOW IMPACT MINING

To enhance the employment and economic benefits created by the forestry and mining sectors, while also advancing efforts to safeguard Guyana's ecosystem services, the country is:

- Implementing sustainable forest management.
- Improving added-value activities locally to assist in creating a higher potential for carbon storage in long-use wood products.
- Improving planning and recovery in mining areas.
- Advancing transparency through Guyana Extractive Industries Transparency Initiative (GYEITI).
- Exploring options for land reclamation and reforestation of mined areas.
- Implementing education and incentives for integrated planning and management of the mining and forest sectors.

## Implementation of sustainable forest management

Sustainable forest management, including forest monitoring and enforcement, along with the implementation of the accompanying codes of practices, are necessary to ensure the efficient management of forest resources. Legality and the activities that accompany attaining same are critical to achieving good governance in the forest sector. The LCDS Investment Programme will increase support for:

- **Finalising and implementing the Voluntary Partnership Agreement (VPA) under EU-FLEGT:** The European Union's Forest Law Enforcement Governance and Trade (EU-FLEGT) seeks to support forest governance through strengthening sustainable and legal forest management and promoting trade in legally-produced timber. The VPA, when concluded, will be a bilateral trade agreement between the EU and Guyana, and will enable Guyana to export legally sourced and verifiable wood products to EU markets. In pursuing this process, Guyana aims to formulate, through negotiations with the EU, a pragmatic VPA which captures the parameters of strong forest governance, sound environmental principles, legality, and wide stakeholder input. At the end of 2018, following 6 years of negotiation, Guyana and the EU agreed in principle to the agreement and have initialled the VPA. It is intended that a period of preparedness will then follow for 3-5 years to enable Guyana to effectively implement the VPA under EU-FLEGT by the issuance of FLEGT licences.
- **Implementation of Programme for Endorsement of Forest Certification (PEFC):** The development of a national forest certification scheme for Guyana is a natural extension of the current FLEGT and REDD+ initiatives, with the Programme

for the Endorsement of Forest Certification (PEFC) system in particular providing strong linkages with existing government policies and processes. In supporting the national implementation of Programme for Endorsement of Forest Certification (PEFC), Guyana will seek to build the capacities of national stakeholders to manage and audit PEFC-certified areas. Guyana will also develop the framework to implement the national process for PEFC. The LCDS Investment Programme will support marketing efforts for boosting local and international trade of certified forestry products.

## **Improving added-value activities locally to assist in creating a higher potential for carbon storage in long-use wood products**

Expanding the value chain beyond primary production is integral to minimising the pressure on its forest by finding the most suitable and economic use for the forest resources. Forest carbon is stored in a more stable state for longer periods of time without being emitted into the atmosphere the further advanced the wood products value chain is. Market research and promotion are integral to finding the most suitable and economic use for the forest resources. Guyana's NDC points out that the use of value-added "could also potentially reduce the pressure on forest resources as derivation of a higher value may result in reduced harvest levels." The LCDS Investment Programme will focus on the development of technical skills and techniques, supporting technology transfer and enabling more marketing and promotion of local products. Focus will be placed on developing the skills and products techniques for value-added activities while supporting technology transfer within the sector and developing added value marketing capability to expand the value chain.

## **Advancing Transparency through Guyana Extractive Industries Transparency Initiative (GYEITI)**

The Extractive Industries Transparency Initiative (EITI) is a global standard to promote open and accountable management of natural resources and seeks to strengthen government and company systems, inform public debates, and enhance trust.

Guyana first engaged the EITI on 4th May, 2010 when the Prime Minister of Guyana expressed the country's interest in implementing EITI.

In August 2017, Guyana submitted its application to the EITI International Secretariat and received official acceptance as an EITI implementing country on 25th October, 2017.

Guyana published its first EITI Report in 2019, covering the fiscal year 2017. This was followed by its second report in April 2021, covering fiscal year 2018. These reports disclosed figures related to mineral productions as well as exploration activities in the hydrocarbon sector.



# Integrated Planning and Management of the Mining and Forest Sectors

The Guyana Forestry Commission's Codes of Practice are designed to take into account the various legislations that are directly related to forest management. They provide guidelines for best practices in order to ensure that continuing economic returns can be obtained over the long term, while simultaneously fostering overall sustainable utilisation and management of Guyana's forest resources. They are designed to balance commercial and environmental considerations with social values through implementation of the GFC's integrated management system that will improve efficiency and address environmental, quality, and occupational safety and health areas.

The LCDS will support the implementation of mineral mapping in the mining districts in order to identify economically exploitable deposits as a means of improving productivity within the mining sector while slowing deforestation. Such prior planning efforts serve to limit areas deforested and efforts to reduce road-building.

This will significantly reduce deforestation by avoiding clearing of forest cover from lands which contain only marginal mineral deposits. A significant portion of Guyana's deforestation results from forest clearing for mining that does not generate a profit. The information will allow the Guyana Geology and Mines Commission to update its geological maps and be better able to use this information to more efficiently identify and plan for extraction of gold or other mineral deposits.

## Explore options for land reclamation and reforestation of mined areas

Mine-site reclamation and closure are legal requirements for all mining operations and is critical to ecosystem restoration or re-establishment. To date, approximately 200,000 hectares of forest areas are available for rehabilitation/reforestation. Whilst some areas may see new vegetation, the majority of these areas will require rehabilitation activities. The LCDS will support these activities.

The Special Land-Use Committee was established in 2009 with the role of providing recommendations to Cabinet on managing land use and land-use conflicts as they relate to degradation from extractive activities; more specifically to explore options for increased, and more effective, reclamation of mined out lands. A Land Reclamation Project was set up in 2014 and resulted in demonstration sites established in pilot areas that included Olive Creek, Dacoura Mines, and Thomas Island, Puruni. The project sought to encourage and promote the reclamation of mined-out areas, especially for small and medium gold-mining operations and was implemented jointly with the private sector. The findings of these pilot activities will be used to guide national decision-making on reforestation and land reclamation in small and medium mined-out areas.



# FOREST CLIMATE SERVICES

As set out in Chapter Two of this document, Guyana may progress with integration of its REDD+ Programme with voluntary carbon markets such as ART TREES. While the functional aspects are described in Chapter Two, there are certain institutional capabilities which underpin Guyana's market integration, mainly captured under two key capabilities (MRVS and Safeguards):

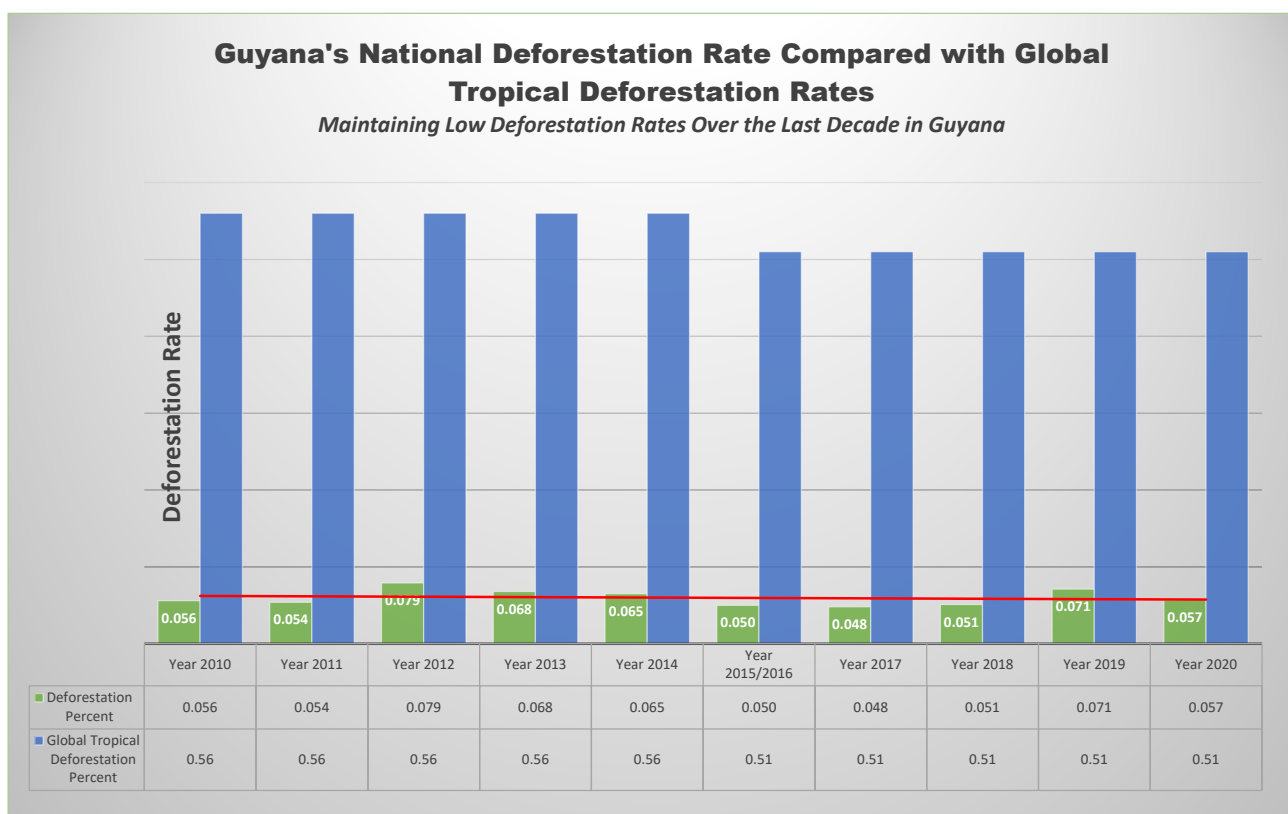
- **Monitoring, Reporting and Verification System (MRVS)** - Guyana's MRVS Roadmap, set out in 2009, was aimed at building a comprehensive national system to monitor, report and verify forest carbon emissions resulting from deforestation as well as forest degradation. The overarching objective of the Roadmap is for all forest-related emissions by sources and removals to be monitored, reported and verified in accordance with United Nations Framework Convention on Climate Change (UNFCCC) guidance. With steady progress over the last 12 years, this has been achieved. The MRVS is now a combined Geographic Information System (GIS) and field-based monitoring system that provides the basis for measuring verifiable changes in Guyana's forest cover and resultant carbon emissions, which will underpin results-based REDD+ compensation in the long-term, based on international guidance and best practice. Through the MRVS, Guyana is able to account for and report on forest change nationally, in terms of forest area lost and forest carbon emissions. These reports have been the basis of performance measurement under the Guyana Norway Agreement. The MRVS will allow for Guyana to account for performance under any new forest agreement in the future, while allowing for the country to achieve the objectives of the Low-carbon Development Strategy. The system is well-positioned to integrate complex market-based fundamentals, including uncertainty assessment, provisions for risk reversals, project nesting, and linkages to forest carbon registries. Forest financing markets requirements of tracking additionality, leakage, preventing double counting and



double issuance of carbon credits, and eventually facilitating project nesting, have been addressed and will be further strengthened through the structure of Guyana’s MRVS.

**MRVS Phase Three Priorities** - MRVS Phase Three will support the improvement of the necessary human and physical capabilities, to be sustained by local institutions, to create the platform for monitoring, reporting and compliance verification under a market-based mechanism. This phase will also build on the REDD+ readiness phase of the MRVS development and result in annual routine reporting on forest carbon emissions and removals in compliance with UNFCCC and IPCC requirements. Simultaneously, the project will create the 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.

## Trend Line Showing Stable Deforestation Rates for Guyana from 2010 to 2020



- **Safeguards Information System for REDD+ and ART-TREES** - Growth in the extractive sectors is only sustainable if safeguards are adhered to. The National Safeguards Information System (SIS) for REDD+ will seek to serve several functions for Guyana, including reporting on results-based financing, providing local information

on the country's performance against the Cancun Safeguards for REDD+, as well as ensuring maintained stakeholder support for REDD+. More specifically, it will provide information on the actual outcomes of Guyana's conformance with the Cancun Safeguards throughout REDD+ implementation, including in the context of accessing REDD+ results-based payments in application of the methodological framework established in the Warsaw Framework for REDD+.

Through the development of the Safeguards Information System (SIS) for REDD+, Guyana intends to monitor REDD+ activities in accordance with the objectives of Cancun Safeguards and report on the progress in implementation of the Safeguards. Guyana is continuing efforts in implementing the safeguards listed in decision 1/CP.16. Further, Guyana seeks to develop a system for reporting in how safeguards are being addressed and respected in accordance with decisions 12/CP.17, 12/CP.19, 17/CP.21. The Cancun Safeguards have been agreed to at the 16th Conference of the Parties to the United Nations Framework Convention on Climate (COP16) in 2010. Countries are expected to implement these safeguards in keeping with national contexts and circumstances. More specifically countries are required to:

- Implement REDD+ activities in a manner consistent with the Cancun Safeguards. REDD+ activities, regardless of their funding source, are to be implemented in such a way that the Cancun Safeguards are addressed and respected.
- Establish a system to provide information on how Cancun Safeguards are being addressed and respected.
- Provide the most recent summary of information on how the Cancun Safeguards are being addressed and respected.

The following safeguards are among the areas to be included in Guyana's Reporting:

- That actions complement or are consistent with the objectives of national forest programme and relevant international conventions and agreements;
- Transparent and effective national forest governance structures, taking into account national legislation and sovereignty;
- Respect for the knowledge and rights of Indigenous Peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples;
- The full and effective participation of relevant stakeholders, in particular Indigenous Peoples and local communities;
- That actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions are not used for the conversion of natural forests, but are instead used to incentivise the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits;
- Actions to address the risks of reversals;
- Actions to reduce displacement of emissions.





# ECOSYSTEM SERVICES

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As Guyana's focus on ecosystem services shifts beyond forest carbon, Guyana is cognisant of other aspects of ecosystem services programmes that may be applicable to the country's circumstances. Some of these schemes include those focused on freshwater management and biodiversity protection.

Ecosystem functions are the full suite of services provided by the natural environment that are vital to human health and livelihoods. These services are the basis for the supply of food, drinking water and in some cases protection against the effects of natural disasters. Ecosystem services are impacted by increasing global populations, changes in technology and rapid economic growth. This is apparent in the growing scarcity of access to clean drinking water, increasing environmental pollution and land-use change, all of which are affecting economic security and impacting the global climate.

As part of its strategy to grow the low-carbon economy, Guyana will focus on integrating ecosystem services into the global economy. While the opportunities presented by Guyana's enormous forest carbon stocks and sequestration capacity may be close to recognition by global markets, Guyana has many other significant ecosystems services - including abundant fresh water and biodiversity. Guyana's forest provides support to:

- **Watershed Protection:** Hydrological benefits - Controlling the timing and volume of water flows and protecting water quality; reduced sedimentation: avoiding damage to downstream reservoirs and waterways and so safeguarding uses such as hydroelectric power generation, irrigation, recreation, fisheries, and domestic water uses. Support will be given to the development of a national water management strategy for Guyana that addresses surface water, ground water, rain water, as well as watershed management.

- **Biodiversity Conservation/Protection:** Support will be given to the development of a framework for leveraging Guyana’s rich biodiversity and natural capital for social, economic, and environmental development in a low-carbon development trajectory.
- **Carbon Storage and Sequestration:** Enhancing carbon sinks and mitigating against higher temperatures by creating their own micro-climate.

The LCDS approaches development from an ecosystems approach, with Forestry and Biodiversity Protection integrated into LCDS 2030. The following Interventions will be included:

- Expansion and restoration of Guyana’s mangrove forests and ecosystems.
- Examination of Green-Grey Solutions (Engineered Infrastructure-Mangroves) utilising mangroves in Guyana’s coastal protection.
- Strengthening and expanding Guyana’s National Protected Area System
- Maintenance of intact forest landscapes and watersheds.
- Building local capacity for implementation of payment for ecosystem services mechanism.

## Expansion and Restoration of Guyana’s Mangrove Forests and Ecosystems

Mangroves provide a number of important services to Guyana that range from the protection of the country’s coastal plain, to supporting biodiversity habitats, to provision of livelihoods to communities. Coastal ecosystems, specifically mangroves, provide an important function in sequestering significant amounts of carbon, designated ‘Blue Carbon<sup>4</sup>. This is of particular importance to Guyana’s REDD+ programme.

At a global level, despite covering 0.7% of total land area, mangrove deforestation accounts for an estimated 10% of emissions globally. It is estimated that mangroves are worth at least US\$1.6 billion annually in ecosystem services. Blue Carbon ecosystems are therefore an important resource to be protected, expanded and or restored.

Guyana has made significant strides in the protection of mangroves through its Guyana Mangrove Restoration Project. This project allowed for the establishment of national administrative capacity to manage mangroves in Guyana and focused efforts on mangrove restoration, community-based mangrove management as well as public awareness. Guyana will intensify efforts at mangrove restoration and management in coming years.

The LCDS seeks to further explore Blue Carbon potential in Guyana, focusing on Guyana’s mangroves in the initial stages. The expansion and restoration of mangrove forests in Guyana is the intended outcome.



## **Examination of Green-Grey Solutions Utilising Mangroves in Guyana's Coastal Protection**

Mangroves, highly adapted to the challenging and dynamic juncture between land and sea, form a resilient green infrastructure that serves as the foundation of an entire, highly productive ecosystem. Their role in consolidating soil is crucial in the process that created our coastal plain. Mangroves grow quickly (2m/yr) when the conditions are right. While their unique roots capture and consolidate soil, they become critical nurseries for commercially and ecologically important marine life, and their tangles of branches provide vital habitats for thousands of other species. Bulwarks of coastal resiliency, mangroves provide crucial protection from storm-surges, flooding and erosion. Remarkable for their ability to sequester carbon and mitigate climate change, mangroves store as much as four times the carbon of an equal area of inland rainforest and most of it is in the soil, held fast by their roots. Increased mangrove cover will increase benefits for Guyana in the LCDS.

The LCDS will advance through a process of assessment of current structures and framework, the design and implementation of a comprehensive framework of Green-Grey Solutions as a component within the mechanism addressing sea and river defense.

## **Strengthen and Expand Guyana's National Protected Area System**

Conservation of forest carbon stocks is a key component of REDD+, with protected areas and other area-based conservation measures as key strategies to achieve this. The establishment of protected areas is an important part of Guyana's LCDS.

The Protected Areas Commission (PAC) was established in 2012 following the passage of the Protected Areas Act in 2011. The PAC has oversight of management of Guyana's National Protected Areas System (NPAS), with responsibility for further expansion of the NPAS. Guyana's NPAS, which currently comprises approximately 8.4% of Guyana's land area, comprises a mix of urban and hinterland protected areas. These protected areas include the Iwokrama forest, Shell Beach Protected Area, Kanuku Mountains Protected Area, Kaieteur National Park and the Kanashen Community-owned Conservation Area; the urban parks include the National Park, Botanical Gardens, Zoological Park and Joe Viera Park.

The role of the PAC includes monitoring and regulation of resource use within protected areas (PAs); preparation and implementation of management plans; support to Amerindian Villages associated with PAs; and public awareness and involvement.

Options will be examined for expansion of the NPAS and implementation effected. This will include not only advancing to the Aichi Target on Protected Areas but also, the more recent, 'Leaders Pledge for Nature'.

## Maintenance of Intact Forest Landscapes and Watersheds

The LCDS will advance efforts to maintain intact forests, protect biodiversity corridors and watersheds. Guyana has been reporting on Intact Forest Landscapes (IFL) since 2010, as a REDD+ Indicator. This was also part of the reporting requirements under the Guyana-Norway Agreement on climate and forests, and integral to Guyana's reporting on forest change and biodiversity protection. Reporting on this indicator stems from the concept that degradation of intact forest through human activities will produce a net loss of carbon and is often the precursor to further processes causing long-term decreases in carbon stocks. Furthermore, preserving intact forests will contribute to the protection of biodiversity.

IFL continues to be an area that is underscored for its broader alignment to non-carbon aspects of ecosystem services and for this reason, it is a central area of the LCDS. The LCDS seeks to sustain growth in the forestry and mining sectors whilst maintaining over 99% of forest cover in Guyana.

**Watershed services** fall into the regulatory category of ecosystem services. Water can serve both a source and a sink function. For example, in comparison to agricultural regions, forested ecosystems regulate storm surges, reduce sediment loading in rivers/streams, and promote sustained water flow. This is an example of how both forested and agricultural ecosystems regulate water, serving as source functions, yet forested ecosystems provide greater climate mitigation potential. Water flow, water quality, transportation provided by waterways, and habitat provided for fishes and marine life are the most common watershed ecosystem services. The LCDS will seek to protect key watersheds and protect the ecosystems which they serve.

## Building Local Capacity for Implementation of Payment For Ecosystem Services Mechanism

The LCDS will support a programme involving Government, civil society, private sector, and Indigenous Peoples and local communities in advancing research and development in ecosystem services and functions. This will include at scale R&D work as well as localised community level development.

Academic institutions at national level (such as the University of Guyana, Cyril Potter College of Education, and the National Center for Education Research and Development)



and local level (such as the Bina Hill Institute) and will be engaged. The programme will be developed and expanded to fully reflect the new and emerging thrust of the LCDS priorities and to holistically expand R&D throughout the academic and vocational pursuits of formal and informal education.

Working with local and international partners, including the University of Guyana, the LCDS will support the establishment of an International Center for Biodiversity Research (and potentially expanded ecosystem services). This Center will connect research work at national and local levels, and provide networking facilitation.

## Biodiversity

Biodiversity or biological diversity is defined as the number, variety and variability of living organisms in a given terrestrial, aquatic, marine ecosystems. Biodiversity is a key characteristic and the foundation of ecosystems from local to global levels. Biodiversity influences human wellbeing through the services they provide. Such services include provisioning of food, fresh water, water purification, fuel, climate regulation, recreation, nutrient cycling and many more. Many people benefit from the exploitation of biodiversity, and as a result, biodiversity and ecosystem services underpin the global economy.

Guyana's biodiversity is important to its people and economy, particularly for its role in provision of ecosystem services, support to livelihoods and economic development. Leveraging our rich biodiversity is recognised as an important component of Guyana's LCDS.





© Pete Oxford - Black Caiman



© Pete Oxford - Dragonfly



## STATUS OF BIODIVERSITY IN GUYANA – WHAT IS KNOWN

Guyana is situated in two of the world's most biodiversity rich zones: The Amazon region and the Guiana Shield. Guyana's ecosystems are largely intact and functional, with a very low rate of destruction/degradation and conversion. Guyana is situated in the northern boundary of the Guiana Shield. This unique region extends to Suriname, French Guiana and parts of Venezuela and small parts of northern Brazil and Colombia. Studies indicate that this region's geographical formation is more than two billion years old and spans 270 million hectares. As a result, it has been recognised as having regional and global significance related to biological diversity. Contributing to this would be the many ecosystems found across the country's landscape including our forests, savannahs, rivers and wetlands. Collectively, these ecosystems provide habitat for hundreds of species of flora and fauna. Guyana's Sixth National Report to the Convention on Biodiversity Diversity (CBD) indicated that current estimates for the major group of biodiversity are as follows – 225 mammals, 179 reptiles, 148 amphibians, 814 birds and 8000 plants.



© Pete Oxford - Green Vine Snake



© Pete Oxford - Moth Caterpillar



© Pete Oxford - Giant Otter Eating Fish

Inclusive of other groups such as Arthropods, Fungi, Nematodes and Algae. The total estimated numbers of species found in Guyana is 13,229 species.

Despite its modest size, Guyana boasts globally extraordinary levels of biodiversity. The country is home to more than 900 species of birds, 625 strictly freshwater fishes, 250 mammals, 250 amphibians, and 210 reptiles, for a grand total of at least 2,285 vertebrates. In maps of global species diversity, Guyana occupies global hotspots for birds, mammals, and amphibians, as well as for freshwater organisms (mammals, amphibians, reptiles, fishes, crabs, and crayfish). Marine vertebrate diversity is typical of the Caribbean region, and scores modestly at the global scale. Guyana is home to more than 7,000 vascular plant species, the great majority of them native to the country. The Guyanese flora accounts for more than 85% of all vascular plant species known from the three countries of the Guiana Shield. More than 100,000 invertebrate species are expected to occur in Guyana (insects, arachnids, crustaceans, myriapods, mollusks, annelids, sponges, cnidarians, and others). A more precise accounting of these groups, and of Guyana's significant fungal and non-vascular plant diversity (lichens, liverworts, algae, etc.), is not possible at present due to incomplete sampling and incomplete species description. All of the numbers in this section are fluid since exploration of Guyana's rich biodiversity is ongoing and new species of plants and animals are described from Guyana every year. In 2021 alone, newly described species for Guyana include multiple fishes, plants, beetles butterflies, and a bat.

**Nearly 100 of the vertebrate species known from Guyana occur nowhere else on Earth.**

These include:

- 75 endemic fish species, such as the armored catfish - *Ancistrus Kellerae* - known only from the Kuribrong River below Kaieteur Falls;
- 19 endemic amphibian species, such as the globally-endangered Kaei Rock Frog, known only from the Maringma Tepui; and
- Four endemic reptile species, such as the lizard *Pantepuisaurus Rodriguesi*, likewise known only from the Maringma Tepui.



# POLICY AND LEGISLATIVE FRAMEWORK AND ACTIONS

## International level

Guyana was among the 168 countries which signed the United Nations Convention on Biological Diversity (UNCBD) when it was opened for signature in June 1992 and subsequently ratified the Convention in August 1994. Currently (2014), there are 194 Parties to the Convention. The Convention on Biological Diversity provides a global legal framework for action on biodiversity. It brings together the Parties in the Conference of the Parties (COP) which is the Convention's governing body that meets every two years, or as needed, to review progress in the implementation of the Convention, to adopt programmes of work to achieve its objectives, and provide policy guidance. To date, the Conference of the Parties has held 14 ordinary meetings, and one extraordinary meeting for the adoption of the Biosafety Protocol under the UNCBD.

The UNCBD is dedicated to promoting sustainable development and recognises that biological diversity is about more than flora and fauna and their ecosystems; it is about people and the need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live. The Convention, therefore, has three main goals: (i) The conservation of biodiversity, (ii) Sustainable use of the components of biodiversity, and (iii) Sharing the benefits arising from the commercial and other utilisation of genetic resources in a fair and equitable way.

## The Nagoya Protocol on Access and Benefit Sharing

This Protocol represents an internationally agreed and binding framework which will enhance legal certainty and transparency for users and providers of genetic resources; promoting adequate benefit-sharing where genetic resources leave the territory of the provider country and associated traditional knowledge is being utilised; as well as supporting mechanisms to monitor and ensure stakeholders' compliance with mutually-agreed terms and National Access Benefit Sharing regulatory frameworks.

## UNCBD Post 2020 Framework

The post-2020 global biodiversity framework builds on the Strategic Plan for Biodiversity 2011-2020 and sets out an ambitious plan to implement broad-based action to bring about a transformation in society's relationship with biodiversity, ensuring that by 2050 the shared vision of 'living in harmony with nature' is fulfilled.

The framework seeks to promote transformative actions to deploy solutions to reduce threats to biodiversity. Actions are intended to ensure that biodiversity is used sustainably in order to meet people's needs. It aims to ensure progress is monitored in a transparent and accountable manner with adequate stocktaking exercises to ensure that, by 2030, the world is on a path to reach the 2050 Vision for Biodiversity as follows:

*“By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.”*

This approach complements the 2030 Agenda for Sustainable Development. It also takes into account the long-term strategies and targets of other multilateral environment agreements, including the biodiversity-related Rio Conventions, to ensure synergistic delivery of benefits from all the agreements for the planet and people.

## **National obligations and actions**

Guyana has committed to implementing the UNCBD and the decisions taken at the Conference of Parties. Guyana will also participate in the ongoing negotiations for the post 2020 Biodiversity Framework.

Since ratifying the UNCBD, Guyana has taken significant steps toward meeting its obligations and ensuring conservation and protection of its natural resources. These include:

- Expanding the Protected Areas system to 8.5% of Guyana’s terrestrial space and initial studies conducted on expanding these areas to meet the Aichi target of 17%.
- Policies developed included the National Forest Policy; National Land Use Policy; Policy on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from the Utilisation, and National Biosafety Framework
- Strategies and action plans developed included the LCDS, Protected Areas Strategy; National Biodiversity Strategy and Action plan 2012-2020; National Forest Plan, National Protected Areas System Plan, National Land Use Plan, and the National Mangrove Management Action Plan;
- Key pieces of legislation enacted included the Environmental Protection Act (1996); Protected Areas Act (2011); the Forest Act (2009); the Wildlife Management and Conservation Act (2016) Biosafety and ABS legislations (draft);
- Established the Protected Areas Commission, and legally designated protected areas included the Kaieteur National Park, Kanuku Mountain Protected Area, the Shell Beach Protected Area, and Iwokrama;
- Guyana has acceded to two Protocols of the CBD: the Cartagena Protocol on Biosafety, and the Nagoya Protocol on Access and Benefit Sharing.

## **Shifting the Paradigm: Leveraging Guyana’s Rich Biodiversity for Development Opportunities (Conservation and Sustainable Use of Biodiversity and Ecosystem Services)**

The Government of Guyana has recognised the importance of Guyana’s rich biodiversity and myriad of ecosystem services. Biodiversity and ecosystem services underpin economic growth, sustainable development and human well-being. Guyana’s rich biodiversity and ecosystem services, wealth of traditional and indigenous knowledge are strategic assets,

and Guyana's diverse ecosystems provide goods and services that supports livelihoods, food, energy, health etc. The Government has set out to ensure that these resources are valued, conserved, managed and appropriately leveraged for social, economic and environmental benefits at the national level whilst meeting international obligations. This is intended to be articulated through the expanded LCDS.

## **The enabling environment**

Leveraging Guyana's rich biodiversity for social, economic and environmental benefits require an appropriate enabling environment that is conducive to a combination of conservation, management, sustainable use goals — including opportunities to attract direct foreign investment and channel financing to deserving enterprises, supporting the development of skills and research and development. Several agencies have overlapping legislation and associated mandates related to biodiversity conservation and management. Guyana will review its national and sectoral policies and laws with a view to better aligning them in this regard.

## **Sustainable economic opportunities**

Biodiversity and related resources have contributed and continue to contribute tremendously to Guyana's economy, particularly the forestry, fisheries, and wildlife sectors. In addition to these and other traditional development activities and sectors, Guyana can develop and promote entrepreneurship based around a range of other biodiversity-related products and services. This can include strengthening of wildlife and eco-tourism products; bio-prospecting; product innovation and development; intellectual property rights; and business incubation and market research. This will also include promoting enterprises by women and young people, and scaling up traditional and indigenous biodiversity-based livelihoods.

## **Strengthening protected areas management and sustainably managed productive landscapes**

This involves:

- Strengthening management of existing protected areas in relation to capacity, resources, monitoring and enforcement, while developing and implementing innovative management approaches for key productive landscapes in Guyana
- Expansion of the National Protected Areas System (NPAS)
- Examining and strengthening co-management (public and private partnerships, corporate social responsibility, technical and financial investments) and community-based approaches to managing biodiversity resources in key areas.

## **Research and Development and capacity building**

Biodiversity data and documentation are vital to understanding the assets that Guyana possesses. There is a paucity of data resulting from poor or lack of standardised data



collection, storage and management. Where databases exist, there is no consolidated system for sharing and exchange. Strengthening and consolidating existing databases and biodiversity-related information systems — including establishing systematic ways to collect, store, analyse and share data — is paramount. The focus is on strengthening research within agencies and especially the University of Guyana, including the Centre for Biodiversity as a centre for excellence. Regulatory agencies, such as the Wildlife Conservation and Management Commission, the Environmental Protection Agency and Protected Areas Commission, will collaborate and develop research programmes to inform decision making, planning and management of biodiversity respectively.

Leveraging our biodiversity through the LCDS needs to be supported by up-to-date knowledge and skills. This requires:

- Capacity-building of professionals with management and regulatory responsibilities.
- Capacity-building of advisory services and technical support related to the Convention on Biological Diversity and the two protocols thereto (the Cartagena and Nagoya protocols) so that representatives are optimally prepared to articulate Guyana's positions and priorities and negotiate effectively at CoP and other meetings of parties.
- Promotion and investment in modern, cutting-edge technologies that are environmentally sound and suitable for Guyana's context, through technology support and transfer.
- Provision of appropriate technology and resource management including monitoring and enforcement. The role of information and communications technology should be emphasised in biodiversity conservation, management, sustainable use.

The above can be explored through South-South cooperation to facilitate access to clean and efficient technology; enhancing the capacity of research institutions for data generation, storage and analysis, such as through centres of excellence; and the participation of the private sector in the development and adoption of technology in both urban and rural areas.



# **INTEGRATED WATER RESOURCES MANAGEMENT (IWRM)**

## **River Basin Management: Planning and Management of Water Resources**

The Government of Guyana recognises that planning and managing water resources necessitates a complete and integrated study of all relevant hydrological, topographical, socio-cultural, economic, political, environmental and institutional factors across all related water-using sectors in Guyana. Further, the intricate nature of Guyana's drainage systems requires that activities for planning and management of the nation's river systems are conducted within the context of hydrological regions: delineated by hydrological boundaries created by Guyana's major river systems. Thus, the Government of Guyana will:

1. Develop and update, as necessary, Water Management Plans for each administrative region (depending on the factors mentioned earlier); adopting a cross-sectoral approach to ensure integration, stakeholder participation and representation of interests at all levels of society; and,
2. Undertake periodic assessments of both surface and ground water resources.

## Water Rights and Allocation

The ownership of water is vested in the State. The Government of Guyana will therefore allocate water in a manner that will ensure equitable access and distribution among users, and promote effective and efficient development and use of water to help achieve the United Nations Sustainable Development Goals (SDGs) and to address poverty, in keeping with the country's Poverty Reduction Strategy Paper (2011-2015).

During periods of droughts and floods, other natural and human-induced disasters, such as the contamination of groundwater aquifers that can threaten the health of the citizens of Guyana and the ecological integrity, the Government will foster cooperation among national institutions on matters pertaining to the re-directing of the use of water resources.

Allocation, customary and conflict-resolution rules will be the formal mechanisms for deciding who gets water, for what purpose(s), how much, at what time, for how long, and under what circumstances water use may be restricted. The Government will recognise basic human development needs as a priority in any water-allocation plan. Additionally, special attention will be given to efficient use of water resources that harmonises greater economic and social benefits within the contexts of national needs and priorities, as well as on hydrological boundaries.

Importantly, the Government, through national institutions will: (i) review water allocation periodically; (ii) revise allocations accordingly in view of socioeconomic development plans, especially pertinent to water resources, and subjected to strategic environmental assessments and sustainability appraisals of significant developments; and (iii) enforce efficient use of water resources that harmonizes greater economic and social benefits within the contexts of national needs and priorities, as well as on hydrological boundaries.

## Water Supply and Sanitation

The Government through national, regional and local bodies, will adopt all possible measures to safeguard the health and well-being of the people of Guyana, and protect the ecological integrity of aquatic systems by:

1. Facilitating improved access and availability of safe and affordable drinking water supplies.
2. Promoting rainwater harvesting and conservation techniques.
3. Protecting watersheds from environmental degradation.
4. Financing water research to determine sustainable use of both surface and groundwater resources while identifying and evaluating threats to all freshwater sources.
5. Improving the current capacity of public water and sewerage institutions to provide necessary drainage and sanitation, including treatment of domestic wastewater in the interest of public health.



6. Empowering institutions to undertake their responsibilities for regulating the use of water to avoid wastage and control pollution by environmentally harmful human actions
7. Empowering local governments, community groups and associations to enhance awareness among the people of Guyana, as well as improve monitoring sources of pollution and wastage at the local levels
8. Implement a comprehensive public awareness and education programme on water conservation in light of the threats posed by global climate change.

## **Water for the Environment**

The Government will consider as a priority environmental protection; restoration and enhancement measures consistent with the National Environmental Action Plan (2005); as well as the Water Management Plans that will be developed in response to specific conditions in the main hydrological regions. The Government of Guyana will give special attention to:

1. Maintaining the integrity of the aquatic ecosystems.
2. Preserving the quantity at levels compatible with demand and supply with regard for multiple uses.
3. Managing surface run-off contribution to stream flow.
4. Restoring the environment through reforestation and green infrastructure.
5. Reducing sediment load from upland sources; improving riparian vegetation, and limiting livestock access to stabilise stream banks.
6. Reducing land degradation.
7. Protecting, enhancing, managing and restoring aquatic and terrestrial species and biological communities.
8. Preserving the water quality of source waters within the watershed.
9. Minimising or mitigating non-point source pollution of both surface and groundwater in the watershed.
10. Conserving and protecting critical habitats within the watershed.
11. Enforcing the “polluter pays” principle in the development of regulatory guidelines for all regulatory actions designed to protect public health and the environment.
12. Regulating exploitation of ground water resources to ensure that discharge rates do not exceed the recharging possibilities.

## **Public and Private Partnerships**

The Government recognises the importance of all stakeholders in IWRM: public and private sectors; communities and local groups; women; Indigenous communities; special needs and individuals. In this respect, all relevant stakeholders will have an important role to play in ensuring the sustainable management of Guyana’s water resources. In an effort to give credence to the importance of the governance structures for water resources management, the Government will delineate the roles and responsibilities of stakeholders based on clearly defined principles.

Participation of the private sector will be encouraged in planning, development and management of water resources projects for diverse uses, wherever feasible. Further, policies and programmes of public and private sectors and agencies involving water resources will be coordinated with other public and private sector organisations to create synergies and reduce conflicts, and actions to promote corporate social responsibility will be incentivised. The Government will create the enabling environment (including capacity building programmes) for stakeholders to perform their roles effectively. In particular, public-private partnerships will be fostered to improve the quality and distribution of water and water-related services to all people of Guyana.

## **Water and Agriculture**

In recognition of the critical role of water resources management in agricultural and, more importantly, food and nutrition security, greater consideration will be given to:

1. The role of drainage and irrigation in the context of Guyana's entire hydraulic system and its impact on the water balance of the country.
2. The need for an increased role of local communities in the management of secondary drainage and irrigation systems.
3. The establishment of surface water storage facilities for agricultural, domestic and other uses to inform efficient allocation during times of scarcity.
4. Strengthening the Hydrometeorological Service both in terms of institutional infrastructure and personnel capacity building.
5. Supporting and encouraging the formation of associations of farmers with responsibility for the operation and maintenance of secondary drainage and irrigation systems in their various localities.

## **Water for Energy**

The Government of Guyana through the Guyana Energy Agency will facilitate the planning and development of hydropower. As practicable as possible, these hydropower projects will be planned and developed as multipurpose projects, with the basin as the unit of planning. Specifically, the Government will:

1. Ensure that the development of the country's hydropower potential is an integral part of the multipurpose uses of water.
2. Ensure that hydropower development is affordable.
3. Promote technical capacity building for local professionals, consultants and contractors involved in hydropower development to ensure sustainability of operations.
4. Ensure hydropower development schemes are subject to sustainability appraisals as well as stakeholder considerations.

# Emergency and Extreme Events/Flood Control and Management

In view of the current threats that climate variability and longer term climate change pose to water resources management in Guyana, the State will:

1. Review current national legislative procedures, and guidelines for combining water-use and land-use planning.
2. Develop and strengthen legislation to make environmental and social impact assessments mandatory in all significant developmental projects.
3. Minimise the effects of climate variability and change as well as institute measures to mitigate the effects of, and prevent damage caused by extreme hydrological events (floods and droughts) in keeping with the National Climate Change Action Plan (2001).
4. Draft Climate Resilience Strategy and Action Plan 2016

The Government will also take steps towards:

1. Undertaking comprehensive development and management of the main rivers by means of a system of structural and non-structural measures.
2. Developing early warning and flood-proofing systems to manage natural disasters like floods and droughts.
3. Developing water resources of the major rivers for multipurpose use, including irrigation, fisheries, navigation, forestry, and aquatic wildlife.
4. De-silting watercourses regularly to maintain navigation channels and proper drainage.
5. Delineating water-stressed areas based on land characteristics and water availability from all sources for managing dry season demand.
6. Initiating actions to protect the water quality and ensure efficiency of its use.
7. Designating flood-risk zones and taking appropriate measures to provide desired levels of protection for life, property, vital infrastructure, agriculture and wetlands Ensuring that land-use planning/building regulations are adequate and enforced in respect of waterways and flood-prone areas.
8. Providing water conservation structures of adequate capacity after carrying out environmental assessments taking, into account multiple uses (e.g. fisheries and tourism) and removing conflicts (e.g. fencing of intakes in dams to allow for restricted fishing).
9. Ensuring rainwater harvesting techniques are incorporated into the building code and enforced.
10. Ensuring implementation of mitigation strategies in consultation with stakeholders.



## Climate Change Adaption and Mitigation

In recognition of the need for improved water resources management in the face of increasing climate variability and climate change, the policy measures that will be implemented by the Government of Guyana will be guided by the National Climate Change Action Plan 2001, and the National Adaptation Policy and Implementation Plan for Guyana 2001. Specifically, the two policy documents identify six actions as adaptation options and response strategies in the water sector:

1. Undertake water conservation measures, including metering, the use of time-runs where the water supply may be staggered according to regions or sectors in the domestic/industrial sector.
2. Continue, cautiously the development of new artesian wells in the interior regions for anticipated population migration from the coast.
3. Introduce efficiency control and management practices for water reservoirs networks, especially those for agricultural use.
4. Introduce scientific monitoring and management of irrigation and drainage systems.
5. Improve water resources management for domestic storage, and water conservancies.
6. Increase standards to enhance resilience of natural water systems through increased application of water standards and effective enforcement.

The Climate Resilience Strategy and Action Plan (CRSAP), developed in 2016, identified key climate risks and priority resilience-building actions and aimed to provide a comprehensive and overarching framework for adapting and building resilience to climate change impacts. The Strategy and Action Plan are underpinned by the five cross-cutting pillars of adaptation identified in Guyana's Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), namely information, research and systematic observation; institutions and capacity building; policy and legal frameworks; infrastructure and technology; and finance.

The relationship between climate change mitigation measures and water is a reciprocal one. Water resource policies and measures can impact greenhouse gas emissions (GHGs), while mitigation measures can influence management of water resources (for example, through hydropower dams, irrigation and drainage of cropland, wastewater treatment, and desalination). Guyana will therefore introduce effective measures aimed at increasing energy efficiency at the national and local levels.

## Wastewater Management

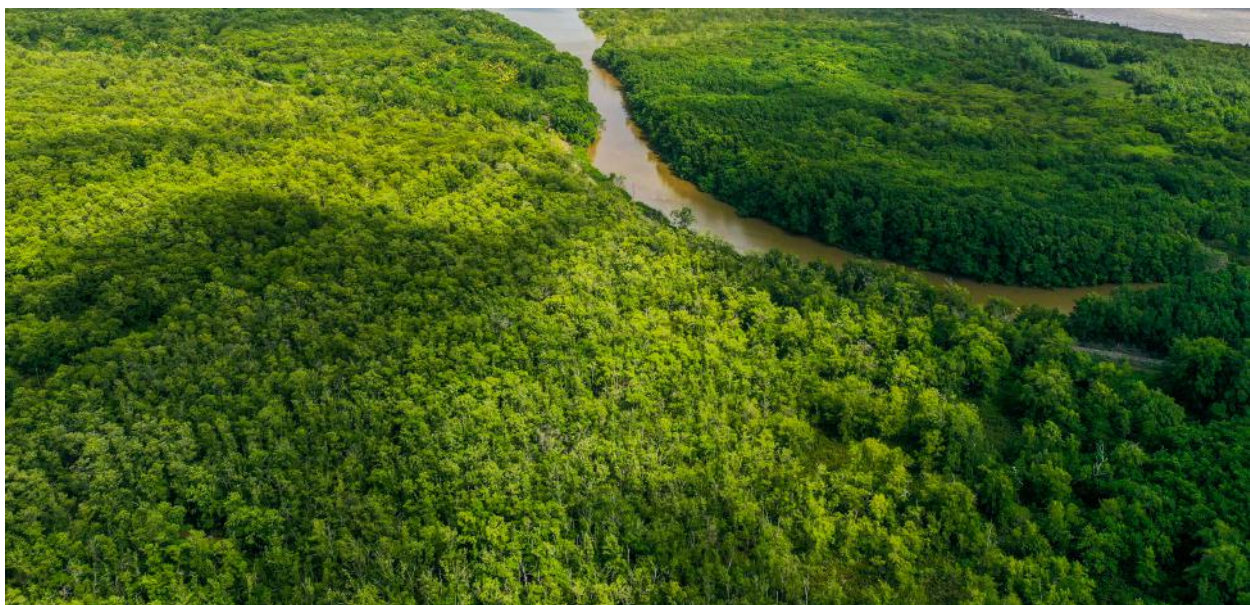
Management of wastewater particularly in Georgetown and other urban areas in Guyana is critical to safeguarding the health of citizens of Guyana, as well as the bio-physical environment. Moreover, as a requirement of the Cartagena Convention and Land-Based Sources of Pollution Protocol, the Government of Guyana will increase investments and human capital in the following key areas related to waste water management:

1. Institutional/technical capacity building.
2. Revision of current policies, laws or other regulatory frameworks on wastewater management to reduce the extent of water pollution.
3. Implementation of public education about waste water management.
4. Monitoring of wastewater.
5. Treatment of polluted water through appropriate technologies and techniques for the reuse and recycling of water.
6. Expansion of the sewerage system.

## Water Governance

The Government will give effect to integrated planning, development, and management of the water resources by facilitating and promoting a multi-sectoral, multi-disciplinary and participatory approach, primarily through the relevant national body comprising technicians who represent stakeholder institutions involved in water resources management. This body will oversee/coordinate all functions of IWRM, meaning not only Water Resources Management, but also water quality regulation, water and wastewater services and water service regulation. The latter will be done in collaboration with Public Utilities Commission.

The roles and functions of water-related agencies would be reviewed and where appropriate, existing institutions will be restructured or strengthened to ensure that sector plans are implemented efficiently. Additionally, special attention will be given to the (i) establishment of mechanisms to foster greater institutional collaboration at the national, regional and community levels through the issuance of specific directives; and (ii) separation of policy, planning, and regulatory functions from implementation and operational functions related to water resources in Guyana.







# **THE OCEAN ECONOMY: DEVELOPING AND PROTECTING GUYANA'S OCEAN ECOSYSTEMS**

Guyana, being a coastal state, also has under its jurisdiction as afforded via the ratification of the United Nations Convention on the Law of the Sea (UNCLOS), a significant ocean area which equates to more than half of Guyana's terrestrial area. Traditionally, Guyana has largely harnessed from its ocean, the fisheries resources, with its other major use being maritime transit. However, since 2015, with the confirmation of significant petroleum reserves, oil and gas are now added to this matrix. In addition, there is an emerging opportunity to enhance these traditional ocean activities, and equally to develop other resources which hold potential for future growth.

## **Sustainable Development**

Guyana recognises that if its resources are collectively harnessed, the ocean offers a new frontier for economic development for the benefit of the citizens. Equally, it also provides many intangible services that are vital to human wellbeing. Therefore, the



development of a Blue or Ocean Economy is a priority, from which some elements offer an opportunity to bridge the land-ocean nexus via low-carbon growth. The emphasis will be on sustainability and exploring new opportunities that will include tourism; expanding carbon sequestration and ecosystem opportunities in mangroves; sustainably managing fisheries stock; expanding the shipping and logistics sector, and exploring greater sovereignty via connectivity.

## **Biotechnology - Genetic Resources**

The coast and deep-sea portions of Guyana's marine ecosystem are not as extensively studied as terrestrial ones. Notwithstanding, it is well established that the marine ecosystems of the Guianas (Suriname, French Guiana, and Guyana), are very productive and show great species richness and biodiversity and by extension diverse marine genetic resources. The various genetic resources have multiple values including ecological, pharmaceutical, cosmetic and commercial values.

## **Ecosystem Services**

Biodiversity is vital for the health and well-being of mankind. Plants, animals and micro-organisms form complex, interconnected webs of ecosystems and habitats, which in turn supply a myriad of ecosystem services upon which all life depends. Ecosystem services describe the multiple values of nature and biodiversity in terms of direct and indirect contributions to human well-being, such as food. They can be categorised as provisioning, regulating, supporting, and cultural services. A mapping of the current and potential services provided by the ocean in Guyana's jurisdiction is beneficial and is recognised as critical information management in assisting the sustainability of the living resources.

## **Fisheries and Mariculture**

With an Exclusive Economic Zone (EEZ) of approximately 136,000 km<sup>2</sup>, most of the fishery activities are concentrated on the continental shelf area and, to a small extent, the continental slope. Guyana has a very productive fisheries sector, with the shelf area unexploited. Fishing may be considered the second most important economic activity along the Atlantic coast. Exclusively, Guyanese fisherfolk dominate the subsistence and artisanal sectors, which are primarily conducted in the near-shore regions along the coast. Seafood is one of Guyana's commodity exports, with marine fish and crustaceans having the highest tonnage exported over the last 20 years. Approximately 4,500 local artisanal fishers operate in the sector, 1,000 of whom are boat owners. A significant number of women are employed in this sector as well.

## **Recreational Tourism**

Guyana is best known as an eco-tourism destination which is centred on activities mainly in the Hinterland regions. However, the ocean provides some niche options, one such being angling tourism. Angling — that is, recreational fishing with rod and line and charter boat fishing — constitutes a high-value and sustainable touristic activity in coastal regions. Its activities contribute income to coastal communities and is a subset of the



overall value of the Ocean Economy. Guyana's abundance of ocean biodiversity provides the required assets to potentially grow this activity into a feasible income generation scheme. Other ocean-based activities can also be part of the tourism appeal such as bird-watching in the mangroves, or tours. When these are added to some of the coastal attractions, it can drive a subset of Guyana's tourism appeal.

## Protecting Marine Life and Coastal Ecosystems

Protecting Marine Life and Coastal Ecosystems: Guyana places great importance on the sustainable use and conservation of marine resources. In this regard, Guyana has recently joined with other world leaders in signing on to the Global Oceans Alliance. The LCDS will support the protection and low-carbon development of marine and coastal ecosystems. This will be done by examining the ecosystems of the coastal and marine environment through marine spatial management and improving the capacity and knowledge of key stakeholders in these areas. Guyana will develop an Ocean Policy, Integrated Marine Management for Land-Based Pollution, and Marine Spatial Plan (MSP) and promote the establishment of Marine Protected Areas (MPAs).

A non-invasive tourism model would be based in the empowerment of the locals, who would receive support and training so that they benefit from potential revenues, for example by offering homestay, bird-watching, research, and wilderness experiences.

The LCDS will support existing Governmental and Non-Governmental efforts (such as GMCS) that are aimed at protecting and restoring marine life and coastal ecosystems in partnership with coastal communities.

## Maritime Shipping, Logistics and Trade

Maritime trade is indispensable for global growth and prosperity in an era of globalisation and trade liberalisation. According to UNTAD (2020), approximately 80% of world trade by volume and more than 70% by value is seaborne. With much of the population of Guyana in the coastal zone, and few road connections to neighbouring countries, maritime trade and shipping is the number one connection that Guyana has to the world. Guyana's shipping services largely comprise three main groups:

1. Inter-island transport, which is often undertaken by small "tramp" vessels, serving the larger islands.
2. Short-sea shipping, which connects Guyana with the other Caribbean and North American transshipment centres.
3. Deep-sea shipping, which uses larger vessels to transport light, sweet crude oil cargo directly from Guyana to its final destinations in USA and Asia.

The trends emerging in this sector, are multi-growth areas such as increased port calls, larger vessel size, and increased container demand. These show its growing significance as a critical enabling component to support the auxiliary services and demands from various sectors. With the high growth forecast for the economy, the importance of having modernised ports are even more critical to Guyana's development.

Collectively, these activities are foreseen to support Guyana's economic transformation. The broad assessment above points to the need for more in-depth information on Guyana's stocktaking of its ocean economy, its governance readiness to embrace this emerging frontier, its plan for equitable inclusion of its citizens and the required planning and enforcement needs. Against this backdrop, the overall strategic priority is formulated along with the action areas.

**Strategic Priority:** Contribute to the growth of the economy of Guyana by enhancing the utilisation and management of its ocean economy through modernised and efficient policy, legal, regulatory, and institutional frameworks informed by data and information, grounded in sustainable development principles.

**Action Area One: Understanding Options for Growth:** Conduct a baseline assessment to map the current and potential areas of ocean activities which have economic leverage, environmental benefits and those that are important in supporting human well-being. Identify areas to improve the country's readiness.

**Action Area Two: National Ocean Policy:** Develop a National Ocean Policy based on the outcomes of Action Area One, taking into consideration, to the extent possible, the required alignment to the relevant sector-based policies to ensure synergy.



**Action Area Three:** Enhance governance readiness to ensure development of the ocean economy and the accompanying required enforcement and compliance regimes to support sustainable management. This includes strengthening the institutional capabilities.

**Action Area Four:** Develop the required guidelines and tools to support sustainable management vis-à-vis:

- Enhance the knowledge-base through the generation of information and research to bridge the science-policy interface.
- Enhance and strengthen the collaboration network among Government and relevant institutions and private sector operators to support a regime of data sharing to generate research and increase our understanding of the oceans.
- Leverage investment via a plan to support various sector growth in the ocean.
- Assess and support the required capacity development to ensure holistic inclusion of its citizens in the ocean economy in all tiers of planning, management and entrepreneurship.
- Establish or integrate Marine Spatial Planning to provide information on use, and to support growth of all sectors while simultaneously addressing any possible resource use conflicts.
- Develop a national system or partner with existing regional capabilities to undertake real-time ocean monitoring and surveillance for pollution-related issues and operational forecasting system.



# CHAPTER TWO

## MOVING TO A MARKET MECHANISM FOR FOREST CLIMATE SERVICES

The 2009 LCDS outlined how Guyana intended to start building a mechanism for the sale of forest climate services, initially through a bilateral agreement with a partner which shared Guyana’s vision before moving to a market mechanism.

This was in line with Guyana’s policy position<sup>9</sup> that:

- The world needs to value a wide variety of nature-based solutions and eco-system services if global climate, health and other challenges are to be met.
- The long-term future for eco-system services should include market-based mechanisms, while also recognising that other forest countries may choose a different policy position.
- The most realistic entry point for building an eco-system services economy is based on carbon through integration of Guyana’s forest climate services into global carbon markets.

As a result, Guyana entered into the Guyana-Norway Partnership in 2009 and – among other successes – built a world-class Monitoring, Reporting and Verification System (MRVS) which now enables Guyana to move to the second phase for selling forest climate services through the voluntary markets.

The Guyana-Norway partnership is summarised below with more detail provided in Appendix Two.

## The Guyana-Norway Partnership

In the absence of a UNFCCC REDD+ mechanism, Guyana and Norway sought to create a globally-replicable model for a likely REDD+ mechanism. When it was agreed, the Guyana-Norway partnership was the second-largest Interim REDD+ arrangement in the world and for performance in the period 2009 to 2015.

During the period 2010 to 2015, Guyana earned US\$212.6 million dollars in payments from Norway having met the performance requirements which included keeping deforestation rates below an agreed threshold and meeting forest governance indicators, which included transparency and accountability, stakeholder involvement in the LCDS/REDD+ processes and in particular the involvement of Indigenous Peoples. These funds were to be spent on projects identified in the LCDS and intermediated through partner entities (international organisations operating in Guyana would bring the model best practices and internationally accepted fiduciary, social and environmental safeguards). However, this period 2010-2015 also saw major cuts to the National Budget by the National Assembly which was controlled by the then Opposition which targeted projects identified under the LCDS, in particular in the areas of renewable energy (the Amaila Falls Hydropower Project) and Amerindian development (Amerindian Development Fund) among others. As a result, while Guyana earned US\$212.56 million by 2015, and US\$52.4 million had been allocated to be spent on LCDS Projects, US\$15.5 million had been expended.

The period 2015 to 2019 saw no earnings under the Guyana-Norway partnership since the agreement was not renewed. Of the US\$150 million that was available in 2015 to the new Government, US\$1.5 million was reprogrammed under the Green State Development Strategy. By 2021, a total of US\$46 million remained in unallocated money.

## Moving to a Market Mechanism for Carbon

The long-term future of forest carbon markets is expected to be underpinned through the UNFCCC's rules and corresponding international agreements. Towards this end, progress on REDD+ was made at, and since, the Paris Climate Agreement, which was finalised in 2015. In 2021, at the Glasgow Conference of the Parties (COP26) of the UNFCCC, Guyana will join with other forest countries and the international community to pursue the enshrinement of a workable market mechanism within the UNFCCC. As a bridge to a long-term mechanism, Guyana may seek to access market-based mechanisms for forest carbon through integration with (i) existing or new compliance markets; (ii)



high-quality voluntary markets. Specifically, Guyana's significant progress on building a world-leading MRVS, coupled with the recent emergence of a large voluntary market with demand supported by sovereign governments, means that from early 2022, there is a strong possibility that Guyana's sale of forest climate services can be structured around high-quality voluntary markets that include private, as well as international public sector financing. Whether Guyana pursues such initiatives will be done in accordance with all UNFCCC safeguards. No binding agreements will be entered into until all safeguard-related requirements have been met. This is outlined further in Chapter Four.

Guyana will approach carbon market integration in the period 2021 to 2030 in two phases:

- **Phase One (to 2025):** Guyana will generate credits to be traded on voluntary carbon marketplaces, with independent verification of the quality of those credits and their adherence to the rules of the marketplaces. Credits will adhere to UNFCCC guidance on REDD+, pending the launch of a full REDD+ mechanism.
- **Phase Two (from 2025):** Guyana will enhance the quality of its credits further through establishing a national carbon registry, integrated with international markets and with any future REDD+ mechanism under the UNFCCC. This will be done in accordance with the rules of all relevant international agreements on markets and carbon trading. It will be underpinned by domestic regulation and/or legislation as necessary for market integration and UNFCCC compliance.

### **Creating a Comprehensive Global Carbon Market Mechanism**

While Phase Two will be influenced by both the UNFCCC and market development between now and 2025, Guyana anticipates that the post-2025 mechanism will incentivise all elements of REDD+, as this is the only way to provide the full suite of incentives for all the world's tropical forest countries.

Therefore, Guyana's proposed forest carbon mechanism has four modules:

1. Reduce - to incentivise reducing deforestation
2. Restore - to incentivise restoring forests where deforestation has already taken place;
3. Conserve – to recognise the value that standing forests provide to the world by storing carbon sequestered over hundreds of years, in Guyana's case 19.5Gt of stored carbon;
4. Remove – to recognise the value that standing forests continue to provide by removing carbon dioxide from the atmosphere.

Together, these modules capture all elements of REDD+ - to provide incentives for all forest countries to move towards global reductions in deforestation and enhanced maintenance of standing forests.

# Guyana Forest Carbon Credits



## CONSERVE

Guyana's 18 million hectares of forest store over 19.5Gt of Co2. Guyana aims to maintain 99.5% of this forest as a global asset.



## REMOVE

Every year, Guyana's forests remove 154 million tons of Co2 from the earth's atmosphere.



## REDUCE

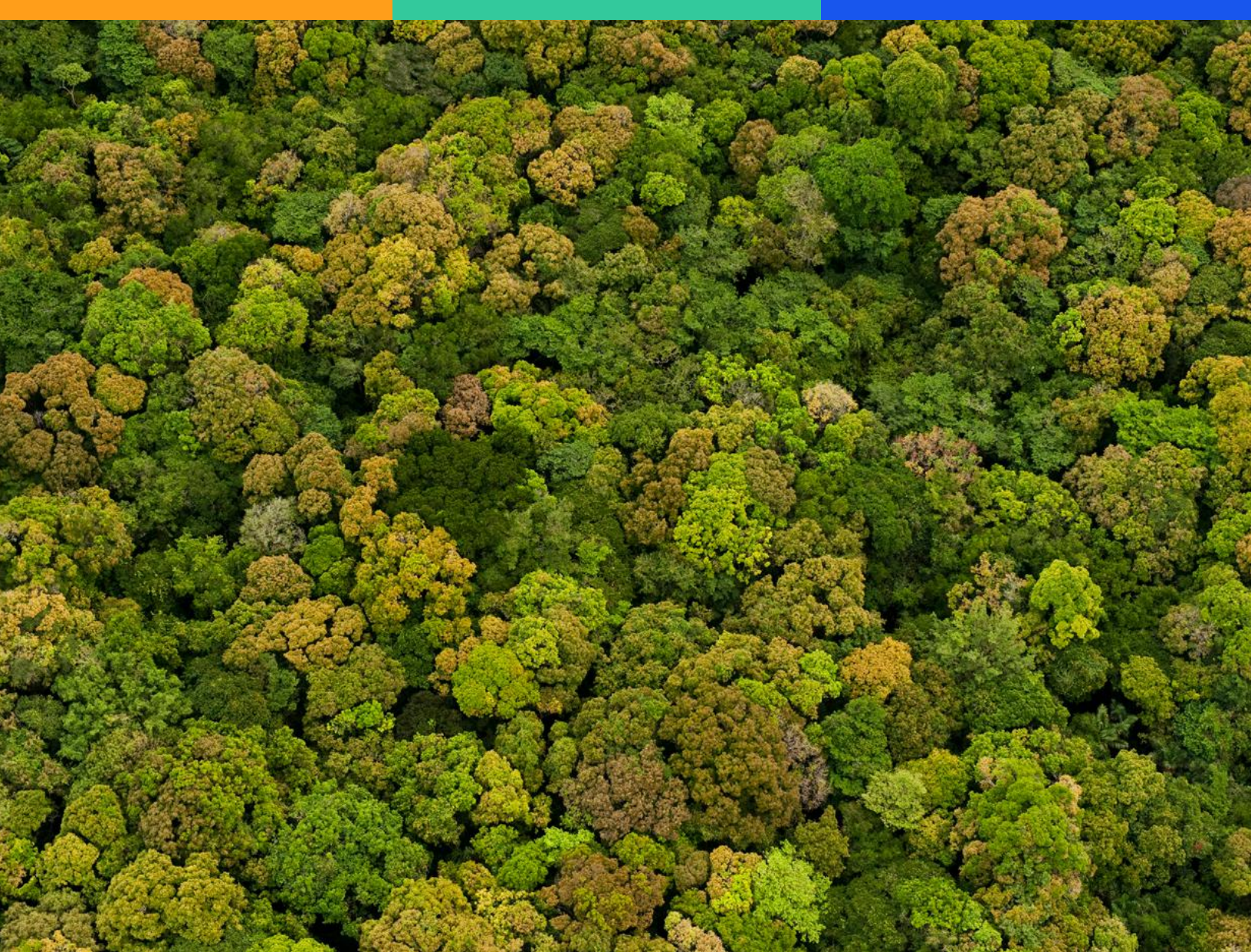
Guyana aims to keep deforestation rates at 90% below the global average.



## RESTORE

Guyana aims to regrow about 200,000 hectares of forest as a priority.





Because of progress since 2009, Guyana can evolve the model to the next stage.

## **Strengthening Amerindian Participation in REDD+ and implementing the Opt-In Mechanism**

REDD+ and ART-TREES implementation has the potential to reduce Indigenous Peoples and local communities' vulnerability to climate change. Improving the sustainability of extractive economic activities and identifying alternative economic activities has the potential to result in additional employment opportunities and improving Indigenous People's livelihoods.

The LCDS is committed to strengthening support for Indigenous communities as they continue the stewardship of their lands and, inter alia, the benefits that accrue from any REDD+ activities from these lands. If they choose to, communities will be supported to better manage their transition to more market-based means of providing for their social



and cultural well-being in ways that continue the tradition of wise use. In accordance with Guyana's Constitution, the rights of Indigenous Peoples and other Guyanese to participation, engagement, and decision making are guaranteed, regarding matters that affect their wellbeing. Such rights will be respected and protected throughout Guyana's REDD+ and LCDS's efforts.

Within the framework of the LCDS and the Guyana-Norway Agreement, the 'Opt-In' has been identified as another mechanism to enable the participation of Indigenous Peoples and other local forest communities in the planning and implementation of Guyana's REDD+ Programme as it regards benefits for forest carbon services.

## **Free Prior and Informed Consent (FPIC)**

Free Prior and Informed Consent will be a guiding principle of the LCDS as it relates to Indigenous villages and communities. Guyana's policy is to enable Indigenous communities to choose whether and how to opt into the REDD+/LCDS process only when communities wish to do so, in accordance with Guyana's policy of respecting the free, prior and informed consent of these communities. This also applies to processes related to REDD+, such as potential carbon markets as outlined in Chapter Two.

In alignment with the principles of free, prior and informed consent, Amerindian communities will not be required to participate in REDD+ unless they choose to do so, and no deadline will be set for whether and how that participation can be conducted.

## **Earning Payments**

Earning payments as Guyana moves towards a market mechanism will involve: (i) integrating with the market standard; (ii) generating credits in accordance with that standard; (iii) marketing Guyana's credits to potential buyers.

## **Market Standard: ART-TREES**

ART is a voluntary international initiative that seeks to reward countries for the seven elements of REDD+. By enhancing transparency and credibility, ART aims to help unlock new, large-scale financing to facilitate global sustainable land-use and, in turn, protect forests. The mechanism under ART that outlines the Standard for Accreditation is called The REDD+ Environmental Excellence Standard (TREES).

## **Generating Credits**

Appendices 1 and 2 describe the methodology for calculating credits, but in sum, Guyana will receive credits for (i) any reductions in deforestation against the previous five-year average (starting with 2016-2020 as the reference period); (ii) restoration of deforested

or degraded forest; (iii) the long-term storage of carbon in Guyana's standing forest, providing that Guyana's deforestation rate does not increase significantly above historic averages. To generate these credits:

- Guyana will submit an annual report from its MRVS, which will then be independently verified and certified to ART-TREES standard.
- At the same time, Guyana has submitted a Safeguards Information Report (SIR) highlighting continued adherence to agreed social and environmental safeguards. Reporting on progress/adherence to safeguards on an annual basis will be a part of ART Monitoring Reports.
- Once the credits are certified, the ART-TREES Secretariat will record them on the publicly accessible ART Registry, from which point they will be available for purchase.

## Marketing Credits

Once the credits are available for sale, these can be sold on the market, either directly by Guyana or through brokers. The agreements, which will set out the terms under which credits are sold, are known as Emission Reductions Purchase Agreements (ERPAs), which will be published on a Government of Guyana website, and independently audited. Credits can be purchased by buyers who recognise the ART-TREES Standard – and sales will take place in line with a process established by ART-TREES to ensure environmental integrity, in accordance with the UNFCCC rules on carbon standards.

Buyers of credits could be sovereign governments (for example, the Government of Norway) or private companies with voluntary commitments to support the maintenance of the world's forests or to take action on climate.

As announced at the Climate Summit convened by the President of the United States, some of the world's major companies (led by Amazon.com), along with leading sovereigns such as Norway, the US, the UK, anticipate adopting ART-TREES as a standard by which they will meet some of their climate pledges. They will pay for these credits through several channels, including the LEAF Coalition.

## Administration of Forest Climate Financing (including at Project Level)

REDD+ under the UNFCCC is designed as a national system, which means that Emissions Reductions (ERs) will be accounted under a national reference level (RL). This is also the case for the ART-TREES methodology. National systems have the premier level of environmental integrity, unlike project-scale systems where action in the project area could potentially displace deforestation or biodiversity loss to another area within the same jurisdiction.

The Government of Guyana will record ERs and manage these through a centralised system. This centralised system will be a single account system, where the national government is the sole administrator of inputs and transactions.

However, the Government is seeking to include opportunities for private sector-led projects (for example, for restoration of mined-out areas) and these will be considered within the context of the national-scale system. This is known as “nesting” under REDD+ and ART-TREES, and Guyana will explore nesting of forest carbon projects that will be accompanied by rules that define the modalities under which nesting is possible and allowed. Such rules include the adoption of harmonised definitions, rules for baseline setting, MRV standards, and approval requirements. Such rules will be a prerequisite to ensure that nesting creates incentives for private investments while protecting the environmental integrity of the national REDD+ system.

When Guyana’s Carbon Registry is operational, such projects may be registered under a voluntary standard or regulated standard and may include project-level activities under the mechanism to contribute to GHG emissions mitigation and support sustainable development (i.e., under Art. 6.4 of the Paris Agreement of the UNFCCC).

## **Investing Payments**

Revenues from market-based payments will finance LCDS activities identified within the LCDS or activities related to the principles of the LCDS and its themes – and approved by the National Assembly via the National Budget process.

The designated allocation of 15% of all earnings for Indigenous villages and forest-based communities, earned under a forest carbon financing mechanism, will be administered through a separate mechanism under the management of the Ministry of Finance and advice of the MSSC.





# CHAPTER THREE

## STIMULATING FUTURE GROWTH: CLEAN ENERGY

Guyana has some of the highest electricity rates in the Americas and is about 97% dependent on imported fossil fuels. Using natural gas as a bridge away from heavy fuel oil, followed by the Amaila Falls Hydropower Project by 2027, Guyana will see a massive expansion of renewable energy across the country. Energy use can increase five-fold with greenhouse gas emissions staying approximately flat – one of the world’s highest levels of decoupling of economic growth and fossil fuel use for energy.

The expenditure on imported Heavy Fuel Oil (HFO) and Diesel for the electricity generation in the 12 public grids (operated by GPL and HECL) was approximately US\$ 100 million in 2020. The Demerara Berbice Interconnected System (DBIS) is the largest grid accounting for 78% of the total cost.

The power demand in Guyana’s public electricity grids is forecasted to triple over the next five years. The DBIS peak power was 126 Megawatts (MW) in 2020. It is estimated the peak load by 2025 will be 415MW. The DBIS has currently 202MW of firm capacity. However, some of that capacity is from aged generators with low reliability. It has been estimated that by 2025, new 300MW of firm capacity will be needed to cover the demand increase, the retirement of aged generators and to increase the grid reliability.

If the electricity supply mix stays as it is today, consumer costs will not reduce significantly, while greenhouse gas emissions will triple by 2027, and increase steadily thereafter. In the original LCDS, it was foreseen that the Amaila Falls Hydropower Project would have been complete by now, delivering cheaper, cleaner electricity. However, its development was not progressed by the 2015-2020 Government. This Government intends to return to a strategy of decoupling economic growth from using fossil fuels for electricity by developing low-carbon energy resources (Solar, Hydro, Wind, Biomass, and Natural Gas) to meet rapidly rising demand and keep greenhouse gas emissions low.

This can be seen as three phases:

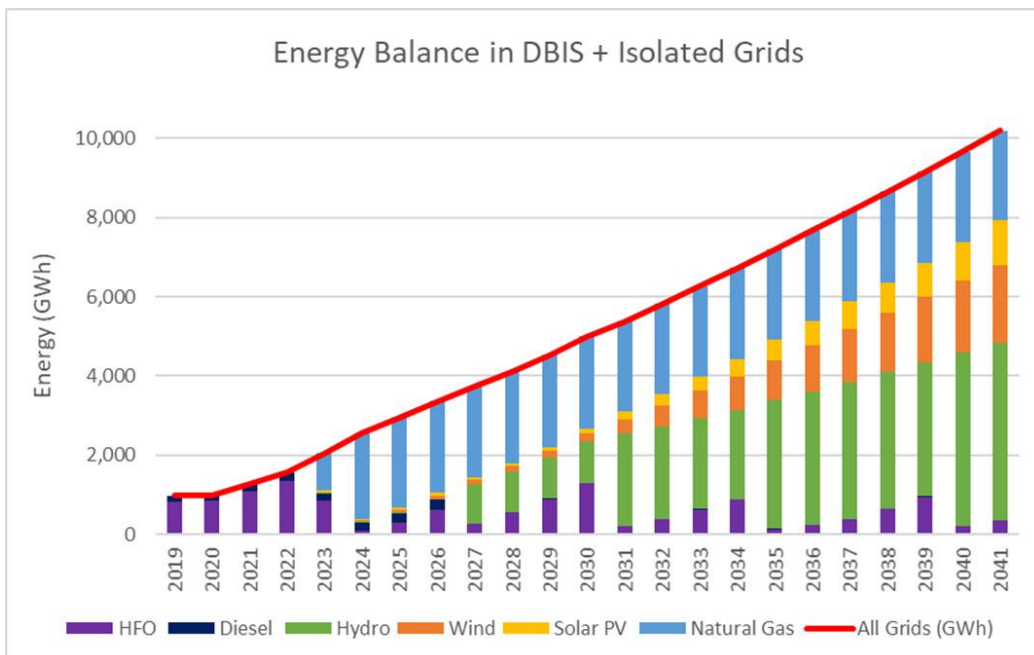
- In the period 2022 to 2027, a near tripling of electricity demand will be met mainly through a combination of natural gas and the Amaila Falls Hydropower plant on the DBIS, coupled with a major expansion of solar power, with batteries, on the rural networks.
- From 2027 to 2032, further increases in electricity demand will be met by continued replacement of HFO, expansion of wind and solar power and the commissioning of Guyana's second hydro plant, the site of which will be identified before 2025.
- From 2032 onwards, expansion will be determined by prevailing market conditions, but it is likely that battery technology will be sufficiently advanced to enable solar and wind plants to provide most new capacity increases while contributing to further downward pressure on electricity prices.

The table in the overleaf summarises how the shift from almost total dependence on HFO will be eliminated, while the figure below illustrates how renewable energy will grow to dominate Guyana's electricity supply. The figure on the overleaf shows how a tenfold increase in electricity demand will see greenhouse gas emissions essentially stay at 2018 levels.

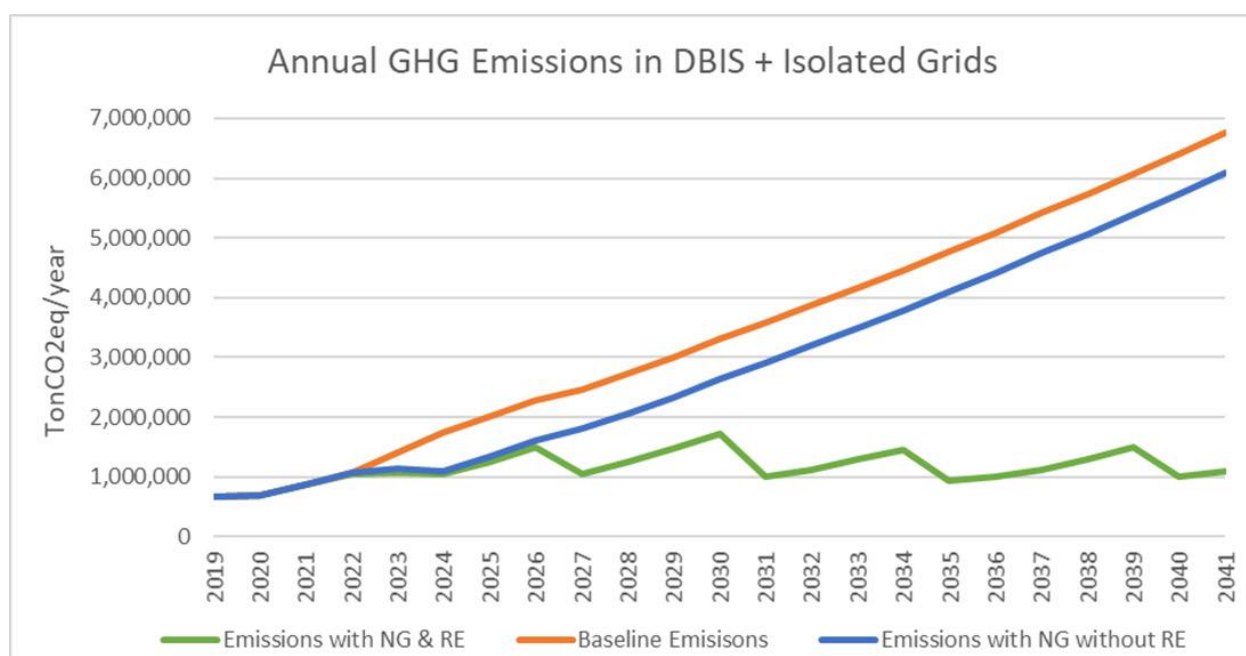
This level of decoupling of economic growth and fossil fuel use for energy is among the highest in the world. More details are set out in the remainder of this section – showing the energy transition for:

- Demerara-Berbice Integrated System (DBIS)
- Isolated Grids (Linden, Essequibo Coast, Bartica, Lethem, Kwakwani, Mabaruma, Port Kaituma, Mahdia, Leguan, Wakenaam, Matthews Ridge) – with Essequibo Coast, Linden, Leguan and Wakenaam being integrated with DBIS by 2027
- Unconnected Communities.

### Energy Mix to 2041



## Greenhouse Gas Emissions to 2041

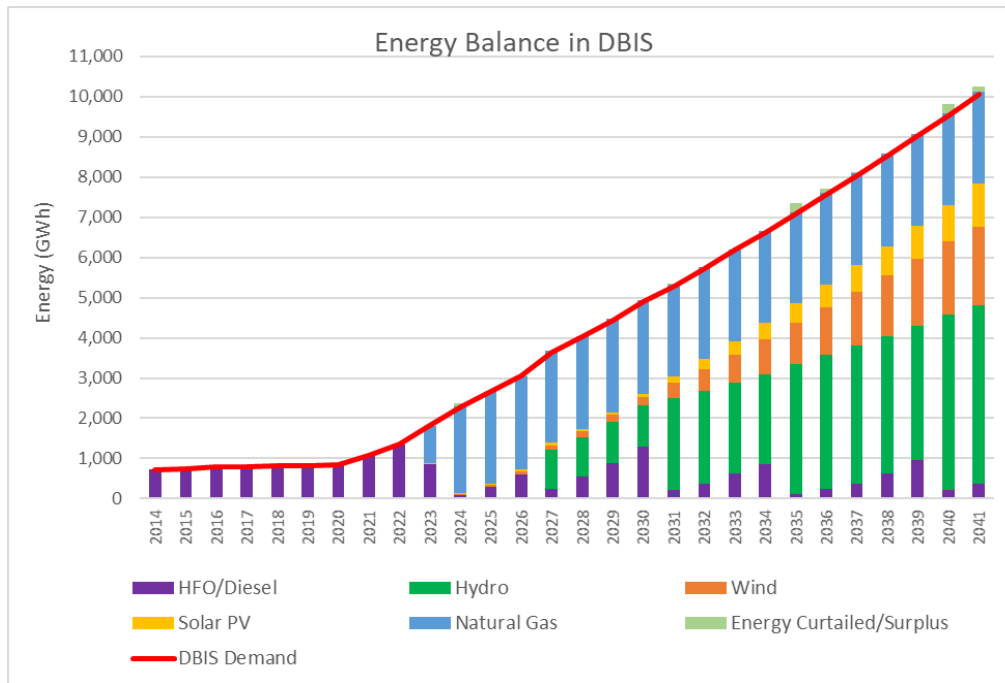


### Demerara-Berbice Integrated System

Today, effectively 100 percent of the power supplied by GPL on the DBIS comes from Heavy Fuel Oil and diesel. The table and figure below illustrates how this percentage will shift in the years ahead while electricity prices are reduced. This is explained in the following pages.

Year	Peak Load (MW)	Back-up HFO or Diesel (MW)	Natural Gas (MW)	Solar (MW)	Wind (MW)	Hydro (MW)	HFO share (%)	Natural Gas share (%)	RE Share (%)
2021	161	203	0	5	0	0	99	0	1
2022	211	203	0	5	0	0	99	0	1
2023	283	192	250	15	0	0	47	52	1
2024	341	182	250	20	25	0	4	94	2
2025	414	182	250	25	25	0	11	86	4
2026	459	157	250	30	25	0	20	76	4
2027	506	132	250	35	35	165	7	62	31
2028	561	107	250	40	45	165	13	57	30
2029	620	82	250	45	55	165	20	52	29
2030	685	57	250	50	65	165	26	47	27
2035	989	47	250	300	315	585	1	32	67
2040	1,326	47	250	550	565	785	2	24	74





## Natural gas in DBIS

To use natural gas for power generation, the following investments are needed: a pipeline to bring the natural gas to shore, a processing plant to separate the Liquefied Petroleum Gas (LPG) and the natural gas, and a gas-fired power plant. The several studies have confirmed that the natural gas option would reduce the cost of generation. The Government is currently undertaking the detailed studies and the financing structuring of the project. It is anticipated that a 250MW gas-fired power plant will be constructed and in operation in 2024. Besides the natural gas-fired power plant, and in order to provide the necessary firm capacity, new reciprocating 46MW dual fuel (HFO/NG) engines have been added to the DBIS grid in 2021. Additional capacity will be installed as part of the Natural Gas Programme. GPL plans to convert 106MW of their existing HFO capacity to dual fuel engines (HFO/NG) by 2026.

By 2025, an additional 296MW of firm capacity will provide power to DBIS and the total capacity to generate electricity with natural gas will be 403MW. This will reduce, by half, the Green House Gas (GHG) emissions associated with the electricity generation in the DBIS.

As part of the Natural Gas Programme, the LPG consumed in the country would be provided by the new separation plant and LPG production facility, avoiding the current importation. The planned offshore pipeline is designed to provide larger amounts of gas. In case new discoveries are made, the natural gas could be used for other industrial activities.

In the short term, the natural gas will provide the needed firm capacity at a lower generation cost compared to the other indigenous renewable energy options in Guyana. But its availability is limited in time (20 years) and to the DBIS area. The development of the solar, wind, hydropower and biomass technologies is a key priority for the future energy sector in Guyana.

<sup>1</sup> <https://nre.gov.gy/wp-content/uploads/2021/04/Feasibility-Study-for-Guyanas-Offshore-Natural-Gas-Pipeline.pdf>

## Renewable Energy in DBIS

Solar and wind are intermittent energy resources, which cannot provide firm capacity unless battery storage is added. Hydropower and biomass resources are variable throughout the year, but in both cases the resource can be stored; and with good planning, batteries are not needed to consider the output as firm.

In Guyana, solar energy, wind and hydropower are good complementary resources. Solar energy is available during daylight hours, peaking at noon, while wind is stronger during evening hours and at nights. Wind is lower during the wet seasons, while hydropower is fully available. Because of their suitability for both the DBIS and the isolated grids, they are discussed under the section on “Isolated Grids” below.

## Utility-Scale Hydropower in DBIS

Hydropower has the potential to provide Guyana with both utility-scale and small-scale capacity. Small-scale is discussed under “Isolated Grids” below.

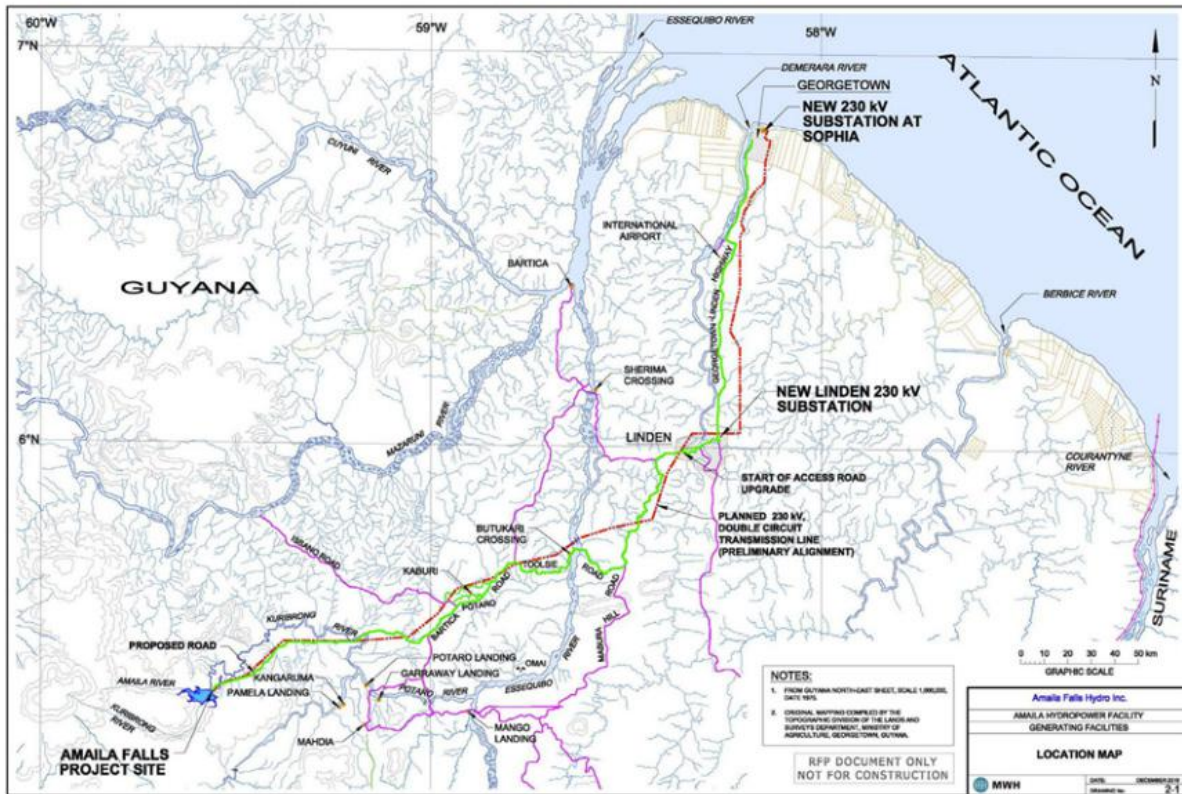
While natural gas provides a short to medium-term solution, over the medium and long term the most sustainable and resilient energy mix in Guyana would be formed by solar, wind, hydro and biomass power plants. Within the renewable energy resources available in Guyana, hydro will be important to provide firm capacity and short-term energy storage to compensate daily and weekly fluctuations from solar and wind. Hydro will provide, in the long-term, a cheaper solution than any other technology, due to its long lifespan.

Guyana has a potential for 8.5 Gigawatt (GW) of hydropower on 33 hydropower plants (including storage capacity and run-of-river). It is anticipated that Guyana will build two hydro plants over the next 20 years: Amaila Falls and another which is still to be identified. Of the potential 33 sites, many were assessed in the 70s and 80s, when environmental and social standards were lower. It is anticipated that the new site will be identified by 2025, with the goal of providing 370MW of capacity by 2035 and a further 150MW of capacity by 2040. In the meantime, Amaila Falls will be the focus of the hydropower programme.

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<sup>2</sup> The average lifespan of a hydropower system is 100 years, over this period, replacement of the mechanical and electrical parts is required, but those account for less than 30% of the initial cost. The lifespan of solar, wind and natural gas power plants are 25 years and after that the refurbishment will be close to 100% of the initial cost. For example, if the hydropower finance model is planned with a transfer of the asset after year 20, the generation cost after, from year 21-100 can be as low as US\$20/MWh.

<sup>3</sup> Arco Norte Electrical Interconnection Study – Pre-feasibility study, 2016



# Amaila Falls Hydropower Project (AFHP)

## Background

The Amaila Falls Hydropower Project (AFHP) was first identified in 1976 during an extensive survey of the hydroelectric power potential in Guyana, carried out by the Canadian company 'Monenco'. A total of 67 sites were identified as technically feasible solutions with a total hydropower potential around 7GW. From 1974 to 1976, a pre-feasibility study was carried out to assess Amaila Falls, which suggested an installed capacity of 200MW. The Guyana Power Study done in 1982 included Amaila Falls as part of Guyana's power generation systems development.

In 1997, a review of the pre-feasibility study and Guyana's electricity demand was done, and it reduced the size to 165MW. Subsequently, in 1998, the Government of Guyana (GoG) signed a Memorandum of Understanding (MoU) with Synergy/Harza for the development of the Amaila Falls Hydropower Project. A feasibility study was submitted to the Government in 2001. In 2007, Sithe Global entered as a potential investor in the Project. The Government of Guyana and Sithe Global established a special purpose company, Amaila Falls Hydro Incorporated (AFHI), for developing the AFHP. The AFHI, after a competitive bidding in 2008, selected China Railway as the Engineering, Procurement and Construction (EPC) Contractor. In 2009, Synergy/Harza, the original



holder of an Interim Development Licence and a subsidiary of Synergy Holdings (Guyana) and Harza International, transferred all rights and interests, obligations, and liabilities under its licence to AFHI. The Environmental and Social Impact Assessment (ESIA) was completed in 2011. A draft Power Purchase Agreement (PPA) with GPL was negotiated in 2011. Agreements with China Development Bank and the Inter-American Development Bank (IDB) for debt financing were negotiated and the project was structured as Build Own Operate and Transfer (BOOT), in which the asset will be transferred to GPL at zero cost after 20 years of operation.

In 2013, Opposition APNU/AFC Parliamentarians did not support the project and it did not advance.

The Engineering, Procurement, and Construction (EPC) contractor negotiated with Sithe Global and the Government of Guyana to take the role as sponsor and to purchase the shares, assets and rights in AFHI from Sithe Global. However, negotiations were interrupted after the then Government took office following elections in 2015.

In 2016, the APNU/AFC Government, with support from Norway, hired an independent consultant (Norconsult) to review the project. The report, published in December 2016, recommended the development of AFHP as the best option for Guyana to achieve affordable, low-carbon electricity.

## **Solar Photovoltaic (PV)– DBIS and Isolated Grids**

Solar photovoltaic (PV) is close to being established as a mature technology in the country. Local prices are in-line with developed countries and local technology providers have the capacity to supply, install and operate on-grid and off-grid.

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 . As part of the roof-top solar PV for Government buildings programme, about five megawatts was installed at 291 buildings across the ten Administrative Regions during the period 2012-2020.

By 2023, GPL will have its first solar on-grid PV farm in Berbice with a total capacity of 10 megawatts-peak (MWp) financed by the Guyana-Norway Partnership. This solar PV farm will generate one percent of the total energy demand in DBIS.

The Government has secured US\$75 million funding – including US\$63 million from the Guyana-Norway partnership - to implement 27.8MWp capacity of solar PV farms in eight different grids to convert those grids in hybrid systems. Those systems will be in operation by 2023 and by then Essequibo coast, Linden, Bartica, Lethem, Mabaruma, Mahdia, Leguan and Wakenaam grids will have an average of 30 percent of their electricity consumed generated by solar PV.

In a second phase of the programme for the Hinterland grids, there is a planned increase of the Renewable Energy share to an average of 50 percent. Solar PV with battery storage will be the main renewable energy resource on the regional grids.

## Wind – DBIS

Guyana’s coast is exposed to the steady Northeast trade winds. A private developer has installed a tower with a wind speed data logger to measure the potential to install large wind turbines. The project is expected to provide 25MW of power.

Plans are in place to conduct wind measurements along the coast and at Leguan. The measures taken in the other locations together with the practical experience from the 25MW wind farm installation will inform the design of the future wind programme.

## Biomass – DBIS

There is some practical experience on the use of biomass as an energy resource for self-consumption like rice husk on the rice mills, the use of the distillate waste to produce bio-methane at Demerara Distillers Limited (DDL) or the use of bagasse for co-generation at the Skeldon Sugar Estate.

The Skeldon co-generation plan—for 30MW of electricity generation using bagasse from the sugar process—was designed to produce excess power that would be exported to the grid. The plant is no longer working as a co-generation system due to the closure of the sugar factory. An assessment report on the co-generation possibilities at Albion and Uitvlugt Sugar Estates concluded that it is feasible to install at least a total power capacity of 23MW.

## Small Hydro – Isolated Grids

Guyana is currently implementing three small hydropower projects: a 150kW in Kato, the rehabilitation of Moco-Moco hydropower site, which would increase the capacity up to 0.7MW and a new 1.5MW hydropower plant in Kumu. Moco-Moco and Kumu hydropower projects will provide energy to Lethem grid. It is expected those two projects, in combination with an ongoing solar PV project, will provide the Lethem grid with 100% renewable energy in 2023. Other small hydro projects will be pursued to provide energy to the regional grids as well as Hinterland villages.

## Rural Electrification

Guyana has approximately 200 Hinterland villages—with a total population of 98,500 people—which are off-grid (outside of the 12 public grids). Most of those villages are

located in remote areas, difficult to reach by road and in many cases only accessible by boat. The main occupation is subsistence farming, small wood-processing workshops and handicraft or trade shops, while a few villages are benefiting from tourism working in eco-lodges. The cost of diesel in off-grid villages can be up to three times the cost in Georgetown. Since 2012, through different programmes, the Government has provided Solar Home System for households and small solar PV systems for schools, public buildings and water pumps. More recently in 2020, the Guyana Energy Agency (GEA) installed a 72KW micro-grid at Moraikabai. Also, a combined five kilowatts of solar PV was installed under the Rural Energy Project in Moraikobai, Powaikoru and Shulinab. Under the planned Solar Home System Project, with support from the Government of India, thirty thousand (30,000) 150-watt systems are expected to be completed in 2022. The Guyana REDD+ Investment Fund (GRIF) funded project "ICT Access and E-Services For Hinterland, Poor and Remote Communities", target is to install ICT Hubs in all 200 Hinterland Villages between 2021 and 2022. The project includes the installation of an average of four-kWp solar PV system to power each ICT Hub.

As part of the 2021 public budget, the Government approved the installation of 10 more solar PV mini-grid systems in Sebai, Waramadong, Paruima, Kurukabaru, Whyaka, Mission Capoey, Lake Top Capoey, Annai, St. Monica and Karaburi, totalling 1.472 MWp (an average of 147kWp/village). Those systems are expected to be in operation by 2022.

In 2021, Guyana signed a grant agreement with the International Solar Alliance for a solar demonstration project in Orealla, Region Six. This will see the installation of a 9kWp grid-tie solar photovoltaic system in Orealla and will be accompanied by a battery energy storage system of 37kWh.

The learnings during implementation of those solar PV projects in the Hinterland will support the development of a larger programme to electrify all Hinterland villages. The electrification will be with the most technical and economically feasible solution (interconnection to larger grid, solar PV and/or mini-hydro). The programme will include the enhancement of the productive usages of the energy to increase the long-term sustainability of the minigrids. It is estimated such a programme would cost US\$80 million and could be implemented between 2023-2026.

## **Modernisation of T&D network (Smart Grid)**

The Transmission and Distribution (T&D) network plays a critical role in power evacuation from power plants and delivery of electricity to customers across Guyana. The electricity service provided to Guyana Power and Light (GPL) customers does not meet the reliability and quality requirements of utilities in developed countries. The low reliability is due to the low capacity of generation, the lack of redundancy in key lines and the low remote supervision and control of the T&D network.

The utilities have been increasing their generation capacity at the same pace as the demand has been growing, keeping a low reserve and excess capacity that is inadequate



to cater for downtime in their generators. A rapid growth in the electricity demand is expected over the next decade. Even with a conservative forecast, the demand in 2025 would be three times more the electricity demanded in 2020. The expansion on the firm capacity that is planned in the next decade with new power plants using natural gas and renewable energy will increase the reliability and resilience to generate the electricity demanded at a much lower cost than currently; but besides that, all the public grids will need important improvements in their T&D which have been developed in a radial way and built with single lines, meaning that a failure in any of those single lines will disconnect customers connected downstream of the faulty line.

To increase reliability in the transmission network to world-class utility requirements, the new transmission lines and substations will be designed to comply with 'N+1 redundancy criteria' (with at least one back-up component). The transmission network will also be expanded to form a real network, avoiding radial configurations where possible. As part of the T&D improvement programme, the existing lines and substations will be progressively upgraded to meet the new redundancy requirements.

GPL's Development and Expansion Programme estimates the need for an investment of US\$686 million over next five years to upgrade, expand and equip the power system to take off and manage the forecasted electricity demand, and to provide services and operate at the required reliability levels of a modern power utility company.



# CHAPTER FOUR

## STIMULATING GROWTH: LOW-CARBON DEVELOPMENT

Stimulating future low-carbon growth will involve advancement in traditional sectors as well as new sectors. The main areas of stimulating low-carbon growth include:

- Expansion of agriculture in savannah areas
- Further development of the hospitality industry
- Expansion of the ICT sector
- Strengthening and expansion of added-value and manufacturing capabilities
- Further development of tourism potential

These sectors require the aligning of financial, human and physical capital to advance low-carbon growth.

These prerequisites are described in this chapter.

## Financial Capital

### Access to Finance in a low-carbon, climate-resilient economy

For many, access to finance remains a hurdle, whether seeking financial capital to invest in start-ups, to sustain a business through an unexpected external shock, expand in light of opportunities, or increase efficiency through different technologies or processes.

Following the success of the Micro and Small Enterprise Development (MSED) project that facilitated loans, grants and training in 17 wide ranging low-carbon sectors, during the implementation of the 2009 LCDS, a second phase will be implemented to assist entrepreneurs to more easily access finance for their low-carbon ventures either through grants or loans under favourable conditions, including guarantees on collateral requirements and reduced interest rates.

The project will be designed with consideration of lessons learned from the previous phase and will continue to take stock of the strong representation of female entrepreneurs. Under the first phase of the MSE project, female entrepreneurs represented 62% of grant beneficiaries and approximately 40% of loan beneficiaries. There were customised training programmes aimed at female entrepreneurs, in addition to those generally offered, and this will continue to be built upon.



Whether under the MSE project and in partnership with the Small Business Bureau or outside of the project, support will be given to female focused initiatives such as the Guyana Women’s Leadership Institute (GWLI) and the Women’s Innovation and Investment Network programmes (WIIN) under the GWLI.

## **Access to Finance Directed at Socio-Economic Development of Amerindians and the Hinterland**

Amerindian communities across the country will benefit from all aspects of the LCDS, and a further 15% of revenue from Guyana’s forest climate services will be invested in communities’ priorities, including Land Titling to address the outstanding requests for the grants and titles; capitalisation of the Amerindian Development Fund to implement Community Development Plans; strengthening Amerindian Participation in REDD+ and implementing the Opt-In Mechanism. Support for Amerindian and other hinterland communities and villages has been at the core of the LCDS since 2009. This involved the starting of the Amerindian Land Titling (ALT) project, and the Amerindian Development Fund (ADF).

From 2021 onwards, support will continue through a number of pillars to be determined in consultation with communities but which will likely include (i) a new phase of the ADF; (ii) support for participation in REDD+ and ART-TREES; (iii) completion of the ALT project. At the same time, communities will benefit from projects covered in other parts of this document, notably from renewable energy and climate adaptation projects:







## Human Capital

### Amerindian Land Titling Project

Legal ownership of land and its autonomous management is an essential factor in the sustained long-term socio-economic and cultural development of people. Supporting the securing of land tenure for Amerindians, Guyana's Indigenous population and the first inhabitants of the country, continues to be a priority. The Amerindian Land Titling (ALT) Project, executed by the Ministry of Amerindian Affairs, will continue to address requests for titling of land and subsequent extensions following necessary investigations.

By 2020, the Amerindian Land Titling project had fallen behind its original objective. In 2021, a new workplan will be released to return the project to a path where it can meet its objective of processing all outstanding requests for land titling, demarcation, and extensions.

Having previously completed 21 demarcations and issued 19 Certificates of Title, along with 13 Absolute Grants, the ALT project now aims to address the outstanding requests for the issuance of 32 Absolute Grants, 47 demarcations and issuance of 49 Certificates of Title.

The important functions of the 'Grievance Redress Mechanism' formulated under the ALT Project will also continue to address grievances related to the land titling process and provide an alternative course of dispute resolution outside of legal redress. A robust communication strategy will be rolled out to complement all aspects of the ALT Project.

## Health

Climate change has been shown to increase "illness and death from floods, heat waves and droughts; water and food insecurity; increased transmission and spread of infectious diseases, diminished air quality; and adverse physical and mental health impacts on populations."

As part of the LCDS 2030, significant efforts will be dedicated to improving both access to and the quality of healthcare services.

Improving the quality of healthcare services will focus on:

1. Sufficient numbers of highly-trained medical personnel to service a low-carbon economy.
2. Modern and upgraded facilities and equipment to facilitate accurate diagnosis, treatment, and care.
3. Efficient management systems, data and information storage and retrieval, including cloud or offsite back up storage of records in the event of site destruction or damage due to fires, floods or other means.
4. Effective, quality medication—appropriately stored, delivered and administered in a timely manner.

## Education

Research has shown that “education helps students develop a strong personal connection to climate solutions, as well as a sense of personal agency and empowerment, it can have consequential impact on students’ daily behaviours and decision making that reduces their overall lifetime carbon footprint.”

Of particular importance—when looking at the interplay between climate change, the environment and education—is the way in which schools/educational facilities should be adapted to build resilience and plan to be prepared for and respond to associated risks related to climate change. The National Risk Management Policy for the Education sector will be key in this regard.

The LCDS will focus on a number of priorities at the policy level looking at initiatives to fulfil the following main outcomes:

1. Train Guyanese to function in a low-carbon economy
2. Develop capacities for trade in low-carbon services
3. Align institutions and programmes to low-carbon development including the University of Guyana and Technical and Vocational Institutions.
4. Develop qualification and experience capabilities to function in a low-carbon economy
5. Improving quality of life

## Physical Capital

As Guyana positions itself for a sustainable future premised on a low-carbon and climate-resilient pathway, Sustainable Planning and Urban Development policies must be implemented in conjunction with sustainable designs that integrate environmental, economic, and social sustainability, where Guyana’s development trajectory is viewed and based on its interactions with the surrounding environment. The challenges of congestion in urban and rural areas—improper solid waste disposal, flooding, low-density

expansion, inefficient modes of transit and car dependency—threaten sustainability and inclusive growth, and the achievement of a low-carbon, climate-resilient economy.

In recognising the growth opportunities offered by a low-carbon economy and to mitigate the challenges experienced, Guyana will embark on context-specific, solution-oriented sustainability planning that is aimed at responding to local socio-economic and ecological issues. This approach will not only support physical planning of cities but also position approaches for regional and territorial development. While urban planning can be seen in simplistic terms as controlling the physical development of urban areas, in a rapidly developing and transitioning economy such as Guyana's, an Urban Development Policy and Plan are the tools that define the trajectory of this growth.

Support will be given to advance the country's village-based Community Development Plans, as well as Guyana's urban areas, including Georgetown, Silica City, and the eight additional towns of the country: Anna Regina, Bartica, Corriverton, Linden, New Amsterdam, Rose Hall, Lethem and Mabaruma. Consideration will be given to an international architectural and urban planning competition for Georgetown and Silica City.

## **Low Carbon Transportation Infrastructure**

Low-carbon technologies within the transport sector are an important component of Guyana's Low-carbon Development Strategy and complements related programme areas of cleaner power generation, and nature-based solutions.

The LCDS will seek to reduce the demand for imported fossil fuels for vehicular transport and its resultant impact on the local environment and health sector.

Among the low-carbon strategies within the transport sector, the LCDS will support the increasing of efficiency levels of vehicle consumption of fuel and will foster the development of an electric vehicle industry to substitute fossil fuels with electricity while enhancing the ability of the electric grid to integrate high levels of intermittent renewable energy.

Specifically, in investing in low-carbon transportation infrastructure, the LCDS will:

- Lower the cost of doing business
- Maintain Guyana's territorial integrity
- Create ease-of-access to social and economic services
- Improve user experience
- Support economic development

## **Digital Infrastructure**

The 2013 version of the LCDS highlighted the importance of digital infrastructure to Guyana's overall development as well as to the low-carbon vision that gave rise to the LCDS.



Several initiatives were set out which have since been completed, including the expansion of Guyana’s fibre optic capability; targeted support for call centers and Business Process Outsourcing (BPOs), and the completion of telecommunications liberalisation. Other initiatives are in progress, including through the Hinterland digital access project described in Chapter Two. The digital transformation of the global economy is accelerating and Guyana needs to continuously advance the development of domestic capability to realise the immense new opportunities this transformation creates for the country.

LCDS 2030 will seek to bridge the divide between coastal and Hinterland communities by advancing programmes on:

## **Access and Connectivity**

- Expansion of the satellite network which provides part of the National Broadband Network.
- Expansion of 4GLTE.
- Expansion of the fibre optic network.

## **e-Governance**

- Service-oriented Government Programmes: this will include a national online portal to serve as a gateway to access digital government services, digitation of population, commercial and land registers; and electronic identification.
- Expansion of data centres to support the provision of services provided by government agencies.

## **Social Capital – Gender and Social Inclusion**

Gender equality and social inclusion are central tenets for the effective implementation of the LCDS and significant efforts will be made to ensure equitable distribution and access to social capital.

The LCDS will promote gender equality and social inclusion mainstreaming in climate change adaptation and mitigation strategies, including disaster risk management. Among the main implementation modalities of the LCDS will be the raising of awareness among the population about the effects of climate change, particularly on vulnerable groups. Participation in the different climate change and conservation programmes with an inclusive approach is crucial since it has been shown that the participation of women in these types of initiative has been particularly successful.

This will see the promotion of sustainable forest management, sustainable productive practices, forest conservation and recovery of degraded areas with small producers, especially women.

Within the framework of the food security and climate change policy, an articulation will be elaborated for collaboration with women and vulnerable groups. Agriculture is one of Guyana's main economic activities and the basis of its food security. Agricultural development is not possible without the participation of the private agro-exporter sector and small associated producers, so that they can obtain a greater return on the sale of their products. Many of these subsectors are dominated by women and their continued and strengthened participation in agricultural production chains is indispensable.

Mining is the main economic activity in Guyana, which accounts for an important segment of the skilled and unskilled labour force. In Guyana, it is necessary to generate skilled labour that can be integrated in this sector and facilitate the integration of women and groups that may be vulnerable. The LCDS will foster an inclusion perspective in the development of the activities and the inclusion of women in decision-making in the mining industry through training and mentorship programmes.

Tourism – both marine and ecotourism – is a crucial low-carbon sector that offers a wider range of opportunities for women to play an active part of the economy. The opportunity to diversify and expand the tourism offering creates the opportunity for women and rural/remote communities to engage in the economy.

A top priority of the LCDS will be to support businesses owned by women and other vulnerable groups and facilitate the access to seed financing for entrepreneurship activities. The LCDS will seek to promote the inclusion of women and vulnerable groups in the key economic sectors, especially trade, industry, commerce and tourism.

Maritime industries are traditionally male-dominated areas, particularly in bedrock sectors of fishing, ports/shipping and marine aggregates. Commercial and offshore fisheries remain a male-dominated sector worldwide. Women's roles and activities in these bedrock sectors tend to be in supporting onshore roles, such as fish processing, food preparation and service sector roles. Women's role in subsistence nearshore/coastal fishing is often unpaid and, therefore, undervalued in economic data.

A move towards valuing ecosystem services and the economic contribution that ecosystems make in supporting the economy will help to highlight the value of the roles of women to the economy. The stewardship and management of ecosystem services and the creation of new small scale business opportunities can also provide additional opportunities for women and more rural or remote island communities, such as through small scale aquaculture.

In achieving all of the above priorities, the LCDS will promote access to accurate, timely, and accessible information that is sensitive to the needs of women and girls, boys, and vulnerable groups including Hinterland communities.



# CHAPTER FIVE

## PROTECTING AGAINST CLIMATE CHANGE

In 2022, work will start on the implementation of Guyana's Climate Resilience Strategy and Action Plan, addressing the most significant climate risks and resilience actions. Priority actions will address sea defense enhancement and maintenance; drainage and irrigation systems; building climate-resilient agriculture systems and improving public health adaptation to climate change.

### CLIMATE ADAPTATION AND RESILIENCE

The adverse and potentially catastrophic impacts of climate change are already being experienced in Guyana. Since the 1960s, the country has observed marked increases in temperature, sea level, and the frequency and intensity of extreme rainfall events. The impacts on Guyanese people, the economy and the environment during flooding and droughts are examples of the devastation climate change may cause.

The first half of 2021 saw catastrophic flooding and impacted large parts of the population. While it is too early to fully quantify the social and economic damage over 74,000 acres (43,473 acres of cash crops and 30,684 acres of rice) of farmlands and over 20,000 farmers were affected. The 2021 flood is likely to be comparable to the 2005 flood which affected close to 37% of the population and caused economic damage equivalent to 60% of GDP. Some areas experienced 120-150 centimetres of standing water, which remained for several days. A socio-economic assessment of the damage and loss caused by the 2005 flood revealed major impacts to the agriculture sector, particularly in the regions of West Demerara/Essequibo Islands, Demerara/Mahaica and Mahaica/West Berbice. Region Four was most severely affected in the 2005 flood (though less affected in the 2021 flood), experiencing close to 55% of the total damage, followed by Regions Two (23%) and Five (19%). Considerable losses were recorded in the sugar, rice, livestock and other crop (fruits, vegetables, roots and tubers, and herbs and spices) subsectors.

Floods are not the only climate emergencies that Guyana faces, following an extended period of dry weather in late 2014 and early 2015, the hinterland was facing drought conditions by April 2015. Region Nine (Upper Takutu-Upper Essequibo) and parts of Region One (Barima-Waini) were particularly affected, resulting in reduction in the agricultural output in the Regions, reduction in available water supply and increased dust pollution, among other issues. The lack of rainfall caused decreased water levels in the wells, lakes, ponds, rivers, creeks and other water sources. Frequent bush fires, destroyed several farms at Aranaputa. Local communities experienced limited access to potable water for domestic and agriculture use. Residents were forced to go to local rivers, including the Rupununi River, for untreated water for domestic use. There were



reports of an increase in the number of people suffering from vomiting and diarrhoea. The drought conditions were also linked to a resurgence of pests, including acushi ants and caterpillars, which attacked the few remaining crops. Dasheen, cassava, eddo and other cash crops were particularly severely impacted by the drought.

With increases in the number of dry spells, drought conditions and changing rainfall patterns, stress on Guyana's internal water resources, aquifers and rivers is increasing.

With resources from the Guyana-Norway Partnership, Guyana developed a Climate Resilience and Adaptation Strategy to set out a comprehensive and overarching framework for adapting and building resilience to climate change impacts. This chapter summarises elements of that strategy. The CRSAP built on the work that had been undertaken in Guyana over previous years and identified key climate risks and priority resilience actions.

In 2021, work will re-start to implement the strategy. Specifically:

- The most important elements of the CRSAP will be brought up to date.
- Funding will be allocated to the four priority climate resilience programmes.
- A strategy to finance the remainder of the CRSAP - from ecosystem services payments and other sources will be put in place.

## Sea Defense Enhancement and Maintenance

Of Guyana's c. 214,970 km<sup>2</sup> in land area, approximately 90 percent of the population live on the 15,000 km<sup>2</sup> close to the low-lying coastline of approximately 459 km – the majority of the coastal zone is below sea level and relies largely on engineered (seawalls and rip raps) and natural (mangroves) sea defense structures to provide protection from the Atlantic Ocean. In Regions Two, Three, Four, Five and Six, sea defense structures protect approximately 244 km of the coastline; 22.81 km are in either poor or critical condition. Mangroves are highly vulnerable to climate change, in particular sea level rise, which could destroy or damage mangroves and, with it, coastal habitats and fisheries infrastructure such as landing sites.

Despite significant investments to rehabilitate sections of Guyana's sea defense system, the 2014 survey of Guyana's sea defense structures, which covered 91.2% of the total length, showed the urgent need for investment as set out in the following table.

### **This will deliver on the following outcomes:**

1. Guyana's sea defence system is more resilient to a changing climate.
2. Sea defence systems are restored and retrofitted.
3. Mangroves are restored and protected.
4. Coastal communities are protected against coastal flooding.
5. Improved awareness of the importance of mangrove eco-system to the sea defence mechanism and livelihood among the general public, including the fishing community.

## Strengthening Drainage and Irrigation Systems

Closely interlinked to the challenge of sea defenses is the drainage and irrigation (D&I) system which is connected to over 150 sluice gates/kokers which are located at the seawalls. With sea level rise consequentially limiting the number of low tide days, opening of the sluice gates/kokers to expel water out to sea is becoming increasingly restrictive, hence increasing the risk of flooding and further exposing Guyana's population and assets located in low-lying coastal regions. Additionally, blocked drains and disabled pumps exacerbate the problem of water expulsion. Therefore, the functional relationship between the D&I system and the seawall needs to be optimised for both to efficiently perform their critical roles. A fault in one could compromise the integrity of the other and efforts are underway to address some of the shortcomings of the D&I system.

Multiple economic activities, livelihoods and communities are dependent on D&I systems. These systems are critical not only for flood control and surface water drainage, but also to provide water for agricultural, domestic and other purposes.

To carry out the dual role of drainage and irrigation, the systems are operated through the concept of nearly constant water level. A large proportion of Guyana's coastal lands lie below sea level and drainage by gravity is possible only during low tides, which makes the systems prone to flooding during extreme rainfall events. The losses and damage from the 2005 floods in Georgetown and the surrounding region exposed the system's limitations in terms of handling a greater intensity of rainfall combined with tidal inflow.

## Building Climate-Resilient Agriculture Systems

Agriculture in Guyana contributes approximately 31.9% to non-oil GDP, employs about 17% of the labour force and generates almost 21.3% of Guyana's non-oil export earnings in 2020. The two largest subsectors are rice and sugar, with combined contribution to GDP of 7% or 24.8% of agriculture GDP over the period 2016-2020. The fisheries industry is also vital to Guyana's economy and dietary intake. It contributed on average, 0.8% of GDP over the period 2016-2020.

However, the conditions associated with a changing climate will have adverse effects on these sectors and by extension Guyana's economy. Sea level rise could increase water salinity in rice fields; temperature increase could reduce rice yields; changes in growing conditions can result in increased weed and pest infestation; the intensity and frequency of droughts are projected to increase, resulting in reduced yields. For sugar, the increase in temperature at night-time, affects the ripening of the crop and, coupled with drought period, can affect yields. Increased rainfall reduces the days available for planting and reaping. Floods from more frequent and intense rainfall, due to over-topping and sea-level rise, reduce the discharge window available for coastal drainage and impact output negatively.

The 2005 floods resulted in damages to the agricultural sector amounting to US\$52.6 million. The sub-sectors hardest hit were sugar, US\$11.2 million; and rice, US\$8.1 million. Non-traditional Agricultural Commodities sustained damages of US\$28.8 million and livestock, US\$2.9 million. With overall costs of US\$29 million and US\$14.7 million respectively, the droughts of 1997 and 2010 resulted in damages to the rice and sugar industries resulting in losses in export earnings to the country and income to many households. More than 1,500 Amerindian families in Southern Guyana, reliant on agriculture were affected and several rice farmers were forced to leave 35% of their rice fields uncultivated. Losses to the other subsectors of livestock and non-traditional agricultural commodities were numerous. In the 2021 floods, over 74,000 acres (43,473 acres cash crops and 30,684 acres of rice) of farmlands and over 20,000 farmers were affected.

The LCDS 2030 will seek to:

- Strengthen sea and river defense systems
- Improve flood control and water management (drainage/kokers)
- Address drought prevention (including in Hinterland regions)
- Implement climate smart initiatives
- Strengthen institutions such as the NDIA, Sea Defence, Hydrometeorological Department, etc.
- Improve response capability for climate events

## Public Health Adaptation to Climate Change

Guyana's health sector already faces challenges including a limited number of health care professionals, shortages of equipment and supplies, and poor physical access to health facilities for some of the population. Health facilities (e.g., hospitals, health centres), which are vital to responding to risks in vulnerable communities, are themselves currently vulnerable to climate change impacts, such as flooding, due to their locations. In addition, it is widely accepted that climate change may exacerbate the incidence of vector and waterborne diseases, including malaria, dengue and chikungunya. Greater rainfall intensity increases the number of potential breeding grounds for mosquito species. Further, untreated pools of contaminated water are breeding grounds for the vector species identified above. These diseases represent a significant economic burden for Guyana's economy and society. Prevention has significant benefits not only by improving the length and quality of people's lives, but also reducing the costs which would arise from treatment and lost productivity.

The LCDS 2030 will support:

- Improving public health adaptation infrastructure
- Improving planning and response capability of the health sector to climate-related impacts
- Developing and implementing programmes to tackle climate-related illnesses



**This will deliver on the following outcomes:**

1. The disaster risk preparedness and management capacity of the health sector is improved.
2. The health sector in Guyana is better equipped to recover from weather-related extreme events, particularly flooding.
3. Communities have better access to clean water and sanitation facilities and improved food hygiene.
4. The incidence of water and vector-borne diseases, such as malaria, dengue and chikungunya, is reduced.
5. Critical health infrastructures are resilient to a variable and changing climate.
6. Health practitioners in Guyana are trained and prepared to respond to extreme events and climate change.
7. The general public is sensitised about the risks of climate-related health impacts, including at the community level.





# CHAPTER SIX

## ALIGNING WITH GLOBAL CLIMATE GOALS: OIL AND GAS

Since the first LCDS was published, oil and gas have been discovered off Guyana's coast, creating new opportunities to transform Guyana's development prospects. Oil and gas revenues will be managed strategically and responsibly, by:

1. Using oil and gas revenues to fund **increased social and economic investments, most notably in health and education**, to enable all Guyanese to reach higher standards of living and wellbeing. In the short-term, education investments will be key to recovery from the COVID-19 pandemic. Then over time, while basic education provision will be strengthened, it will be augmented by new support for technical and vocational skills, with a particular focus on strengthening digital skills. Investment in healthcare not only saves lives, but it also helps with investment in the wider economy, so hospitals will be improved, and new staff capabilities will be developed.
2. Support for **diversification of the economy** by supporting non-oil sectors and supporting development all across Guyana. This will involve support for physical infrastructure – including river, road and air transport networks; the national digital connectivity network; and repairing coastal and Hinterland climate protection infrastructure. It will also involve targeted support for agricultural expansion in non-forested parts of Guyana to enable Guyana to become self-sufficient in key agricultural products, as well as an exporter to the region and beyond.



Further details of this investment will be provided through the relevant sectoral strategies but in sum, they will enable Guyanese to seize the opportunities provided during the finite period of time when oil and gas can drive Guyana's development.

At the same time, the Government recognises that Guyana will need to align development of its oil and gas sector with global trends towards decarbonisation. It will do this through two strategic objectives:

- **Ensuring a domestic low-carbon transition:** As outlined in earlier chapters of this document, Guyana intends to achieve ambitious domestic targets to maintain its position as a net-zero economy, prioritising action on forests, low-carbon energy and transportation. In summary, Guyana's non-forest emissions can continue to stay low as the country grows its economy, while the forest will continue to sequester carbon and sustain the country's status as a net absorber of carbon. With the right economic incentives, ecosystem services can provide an at-scale diversification opportunity for Guyana, reducing the need to pursue high-carbon economic pathways.
- **Participating in a global low-carbon transition:** The majority of Guyana's oil and gas will be sold in the global marketplace. The Government believes that this market needs to develop in alignment with the goals of the Paris Climate Agreement, specifically, to stabilise global temperature increases at less than 1.5 degrees Celsius above pre-industrial levels.

As a result, most of Guyana's oil and gas will serve global demand, and the trajectory will be set by those who create the demand. The Government will steward Guyana's oil and gas industry accordingly, and the measures to achieve this are set out below.

## The Global Low-Carbon Transition: Aligning with Global Net Zero

To achieve the goals of the Paris Climate Agreement and stabilise global temperatures at or below 1.5 degrees above pre-industrial levels, global oil demand needs to fall sharply before 2050.

In March 2021, the International Energy Agency, with the involvement of energy and climate leaders from over 40 countries, set out seven key principles for meeting the goals of the Paris Climate Agreement, and "implementing net zero" in the global energy sector by 2050.

The seven key principles led to a July 2021 report, setting out how "Net Zero by 2050" could be achieved, and outlined how this requires a complete transformation of the global energy and transportation sectors. Between 2020 and 2030, global renewable



energy capacity needs to increase four-fold, the use of electric vehicles across the world needs to increase eighteen-fold, and the energy intensity of global GDP needs to decrease by four percent per annum. Achieving this transformation will require huge leaps in innovation including advanced batteries, hydrogen electrolyzers and direct air capture and storage.

The report outlines how, under the “Net Zero by 2050” scenario, global oil consumption will decrease from 98 million barrels per day in 2019 to 72 million barrels per day by 2030, and 24 million barrels per day in 2050.

By 2050, at this level of consumption, 70% of oil use will be in applications where the fuel is not combusted and therefore do not result in any direct CO<sub>2</sub> emissions, for example, the use of oil as chemical feedstocks and in lubricants, paraffin waxes and asphalt.

Therefore, the central challenge for the international community is to align behind a scientifically and economically rational set of policies to drive oil demand down from almost 100 million barrels a day to 24 million barrels within 40 years.

## Guyana’s Policy Position

Guyana supports the achievement of Net Zero by the 2050 target, including the more short-term target of a 28% reduction in global oil demand by 2030.

To be effective, global policies to achieve these targets need to be fair, economically rational and based on science.

Fairness requires that the oil industry – which is worth US\$3-4 trillion every year – should not just be for the benefit of incumbents, particularly when those incumbents are already very wealthy. The world’s largest oil producer – the United States of America – has a per capita income of US\$65,000 – about ten times that of Guyana. If Guyana were to prematurely forego oil and gas revenues, it would simply mean a continuation of a de-facto monopoly where incumbents would meet demand and benefit from the industry which will be worth trillions of dollars for decades to come. It would also mean that Guyana would remain poor and unable to invest in lifting the living standards of its people. Rather than expecting supplier countries to forego opportunities by leaving them to incumbents, predictable global policies are needed. Since 2009, Guyana has supported two main global policies:

- **A global price on carbon, whether through a global carbon tax regime or a global carbon market**

A carbon price, levied on the consumption of oil and gas, incentivises both investment in lower carbon replacements for fossil fuel electricity and transportation (for example, renewable energy and electric vehicles) as well as managing the global low-carbon transition, by progressively driving out the highest carbon, least economically viable fossil fuels, particularly coal,

oil and gas. Calls for such a carbon price have been made for many years – notably in the 2010 report of the United Nations Secretary-General High Level Advisory Group on Climate Change Financing for which Guyana was a part of the 15-member team. Subsequent analysis emphasised the criticality of this issue, including the “Report of the High-Level Commission on Carbon Prices”, sometimes known as the “Stiglitz-Stern Report”, which concluded that a carbon price between US\$50 and US\$100 will be needed to achieve the dual goals of increasing low-carbon investment and aligning with a Paris Agreement target for reducing fossil fuel usage.

Despite this long-standing consensus that a global carbon price regime is needed, international action to progress this regime remains inadequate. The Government of Guyana supports calls for the international community – working through the United Nations Framework Convention on Climate Change (UNFCCC) and other relevant international institutions – to accelerate work on both the methodology and implementation of this pricing regime.

- **The removal of subsidies for fossil fuel production**

In 2019, fifty of the largest economies in the world – who account for 80% of global greenhouse gas emissions – increased their support for fossil fuel production by 30%, with total support reaching US\$178 billion. Most of this was in developed (OECD) countries. In effect, this uses public money to drive down the costs of oil production, regardless of the carbon-intensity of the oil and gas being produced.

The Government of Guyana supports calls for the elimination of such fossil fuel subsidies, especially in OECD countries where subsidies are the most distorting. This will lead to the breakup of the current monopoly-like situation, and the stabilising of price levels.

Combined, these two policies can drive the most carbon-intensive and least economically-rational oil and gas out of the market, enabling the remaining post-2050 supply of oil to be the lowest carbon and most economically efficient.

At the same time, to drive down carbon intensity further and remain relevant in a Paris Climate Agreement-compatible oil market, Guyana will significantly increase domestic policy measures, including:

- **Tax on Flaring**

Globally, gas flaring – which results from the burning of gas in connection with oil production – causes more than 300 million tonnes of carbon dioxide to be emitted every year. If this was used to produce energy, it would generate enough electricity to supply the entirety of the African continent’s current annual demand.

The Government of Guyana is implementing a “no flaring” policy, except in the case of genuine emergencies. This will be done in a phased way.

When the current Government took office in 2020, there were no safeguards in place to disallow flaring. As a result, the Government implemented one of the very few taxes on flaring in the world – where beyond the commissioning period, all flaring will be taxed at US\$45 per tonne of carbon, along with a payment for the actual gas lost.

In parallel, new measures have been introduced to ensure that all waste management is the responsibility of the oil producer, from “cradle to grave”.

- **Support for New Technology**

The Government will continue dialogue with oil producers to ensure that, alongside the above measures, exploration and production operations continue to explore all possibilities for lower carbon technological innovation – including the use of renewable energy in oil production, Carbon Capture Utilisation and Storage (CCUS) and, – when technologically viable – green hydrogen.







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# CHAPTER SEVEN

## INVOLVING ALL GUYANESE IN THE LOW-CARBON TRANSITION

Ongoing engagement of all Guyanese is essential to successfully creating the new low-carbon economy in Guyana. This will be done through (i) a national consultative process; (ii) ongoing input from the Multi-Stakeholder Steering Committee; (iii) oversight by the National Assembly and its parliamentary committees; (iv) ongoing communication and awareness raising.

### National Consultation

This draft of the LCDS will be the basis for a National Consultation that will take place in the latter part of 2021 and will conclude in February 2022, following which feedback will be considered and the revised version of the LCDS produced by end of April 2022. The goal of this process will be to receive and incorporate broad-based feedback on the measures contained within the Strategy.



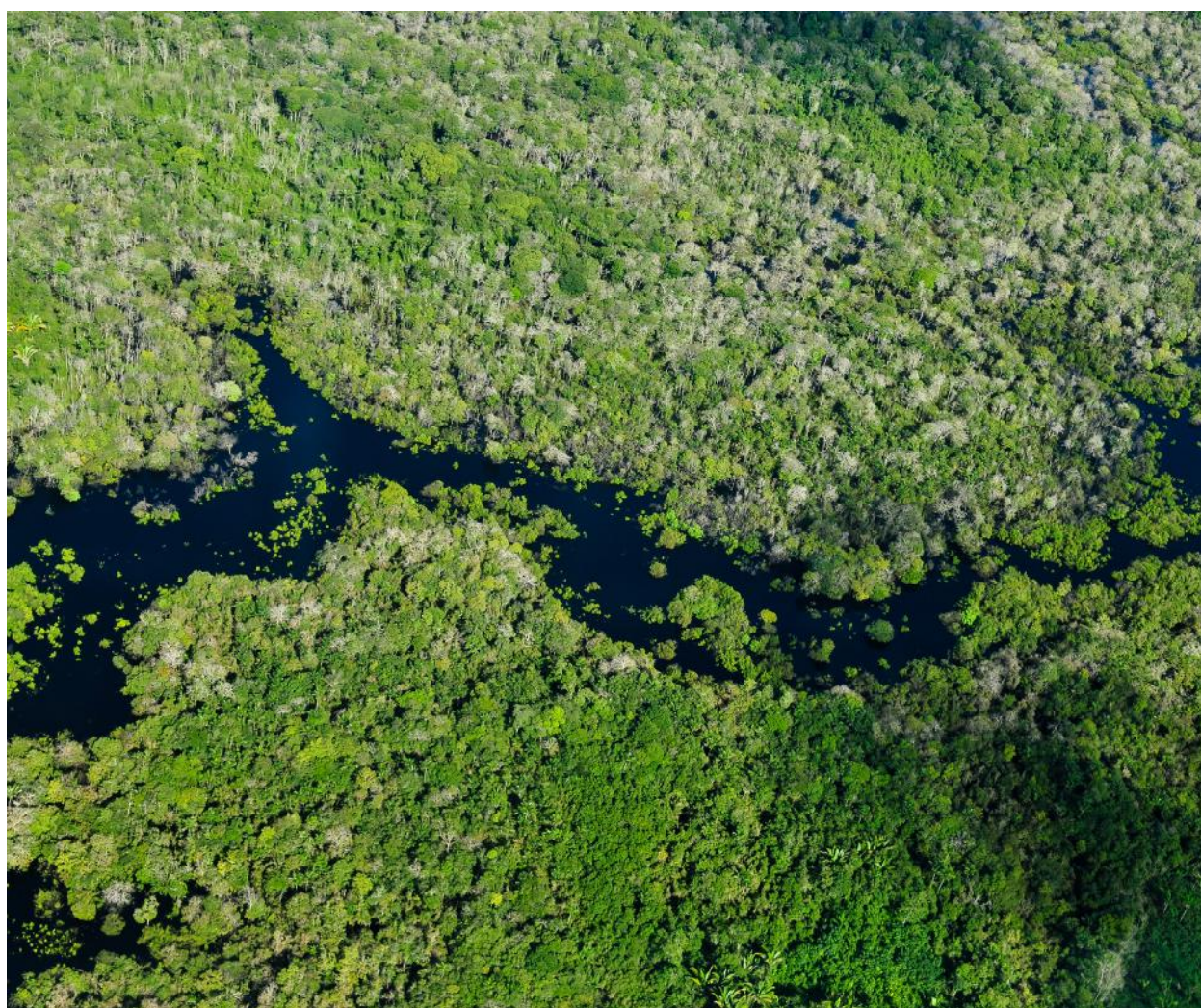
Moreover, each element of the LCDS will also be subject to more detailed consultative processes. The LCDS will be tabled in the National Assembly following finalisation.

Programmes will be subject to annual consultations, involving Non-Governmental Organisations and individuals, as part of preparations for the National Budget. Annual measures will also be part of the scrutiny of the national budget by the National Assembly.

## **Multi-Stakeholder Steering Committee (MSSC)**

The MSSC will be re-constituted for the National Consultation. The Committee will comprise members of Government bodies, Non-Governmental Organisations, Civil Society, Private Sector, and Indigenous communities.

The MSSC will meet on a regular basis after the National Consultation is completed and the LCDS has been tabled in the National Assembly to take forward elements of the LCDS, which will require further consultation and idea generation. This will continue during the LCDS implementation.



# APPENDIX 1

## BACKGROUND ON DEFINITION AND VALUATION OF GUYANA'S FORESTS

Over the past decade, the advanced MRVS built in Guyana enables the country to move to the next stage of its forest climate services strategy. Key information relating to that strategy is set out in this appendix including:

- Definition of forests
- Resulting Forest Area
- National Forest Carbon Stock
- Valuation of Guyana's Forest Ecosystem Services
- Next Step in monetising value: ART-TREES

### 1. Definition of Forests

Guyana's definition of forests is in conformance with Decision 11/CP.7 of the Marrakesh Accord which was adopted by the UNFCCC in 2002. This was later extended to land use, land-use change and forestry activities carried out under the Clean Development Mechanism (CDM) of the Kyoto Protocol by Decision 19/CP.9 adopted at Milan (UNFCCC, 2004).

Guyana classifies land as forest if it meets the following criteria:

- **Size:** Over a minimum area of one hectare
- **Canopy Cover:** Tree cover of minimum 30%
- **Height of Stand:** At a minimum height of five metres at maturity.

Land area that satisfies the area, height and crown cover criteria for forest but are not classified as forest include lands that are predominantly under agriculture, infrastructural development and settlements.

### 2. Forest Area

Utilising the above definition, Guyana's MRVS Report 2020 reported total Forest Cover as 18,001,790 hectares – about 85 percent of Guyana's territory.

### 3. Guyana's National Forest Carbon Stock

Guyana completed a national field assessment of forest carbon stocks in 2018 and concluded that on average at the 95 percent Confidence Level, one hectare of forest stores 1,213 tCO<sub>2</sub> (tons of carbon per hectare of forest). The results of the field assessment were submitted to the UNFCCC as part of Guyana's Reference Level for REDD+ and has been found to be robust. Additionally, the field assessment was also audited as part of the Guyana Norway Agreement Performance audits and validated.



Guyana's MRVS Report 2020, has reported total Forest Cover as 18,001,790 hectares.

Guyana's total forest carbon stock is:

Total Hectares of Forest X Average Carbon Stock per Hectare = Total Carbon Stock

$$18,001,790 \text{ ha} \times 1,213 \text{ tCO}_2 = 21,836,171,270 \text{ tCO}_2$$

## 4. Valuation of Forest Carbon and Wider Ecosystem Services of Guyana's Forest

Estimates of the economic value that Guyana's eco-system services provide to the world are up to US\$5.4 Billion annually. This derives from a focus on the broader ecosystem valuation. The valuation references the UNU-IHDP and UNEP (2014), Inclusive Wealth Report 2014, Measuring progress toward sustainability, published by the Cambridge University Press.

This Report assesses Non-Timber Forest Benefits. It expresses that one way to assess ecosystem services (ES) from an asset perspective is by valuing the expected flows of ecological services over time at their marginal contribution to economic welfare (United Nations Statistics Division 2013b). The valuation table below summarises the 15 highest values of ecosystem services, excluding climate services, as there is already a market for forest carbon services.

This results in total forest area of Guyana, multiplied by the value of US\$2,990 per hectare annually, and computing an estimated US\$5.4B annually.

Hectares of Forest X Value per hectare = Total Value

$$(18,001,790 \text{ ha} \times \text{US\$2,990}) = \text{US\$54.B annually broader ecosystem services valuation}$$

This is in line with other studies – including a 2009 study by McKinsey & Company which used very conservative valuations to establish that the Economic Value to the World (EVW) provided by Guyana's forests if left standing, contributed US\$40 billion to the global economy each year.

On the other hand, a related independent assessment by McKinsey & Company estimated the value of Guyana's rainforest, if harvested and the land put to the highest value subsequent use, to be between US\$4.3 billion and \$23.4 billion. The wide range of estimates is driven by fluctuating prices for commodities such as logs, rice and palm oil – but the most likely estimate is US\$5.8 billion. This forest value known as Economic Value to the Nation (EVN) is the equivalent of an annual annuity payment of between US\$430 million and \$2.3 billion, with the most likely annuity payment being US\$580 million.

However, generating this EVN, while economically rational for Guyana, would have significant negative consequences for the world by reducing the Economic Value to the World (EVW) stated above.

Therefore, Guyana's advocacy for a market-based mechanism for valuing forests seeks to achieve a long-term monetisation of standing forest value that is between the Economic Value to the World (US\$40-US\$54 billion) and the Economic Value to the Nation (US\$580 million).

However, as set out in 2009, this will happen in a stepwise fashion, in part because capabilities for forest monitoring and verification need to be in place to begin.

The first phase was the Guyana-Norway partnership which used a proxy-based system as set out in the Guyana-Norway Joint Concept Note. Now that the MRVS and other capabilities have been built, the next step will be integration with a market mechanism as set out in Chapter Three of this LCDS.

## **5. Starting Access to Markets – Target Methodology**

In guiding Guyana's integration with a jurisdiction-scale, market-based mechanism as set out in Chapter Three of this document, Guyana will be seeking markets that recognise all aspects of REDD+ as defined by the UNFCCC.

This means that Guyana believes that markets should create long term incentives to encourage all countries to improve their HFLD score (which captures both the extent of standing forest and the rate of deforestation in a given jurisdiction). Practically, that means that markets must grow to recognise:

- Conservation of Standing Forests: Guyana's forests store more than 19.5 Gt CO<sub>2</sub> to 21.8 Gt CO<sub>2</sub>.
- Removals: Every year, Guyana's forests remove about 154 million tCO<sub>2</sub> from the atmosphere
- Reductions in Deforestation: Guyana aims to stay 90 percent below the global average
- Restoration of Forests: Guyana aims to restore about 200,000 hectares of forest as a priority

Guyana will seek out markets that best match Guyana's strategic objectives across these four areas, and has set out a methodological approach, where the crediting level for grow emissions is to be determined by:



**Historical emissions level up to 15 years  
plus  
(HFLD Score X 0.1% of carbon stock )**

Where:

- Forest Carbon stock to include all carbon pools appropriately adjusted for uncertainty.
- Reversal buffers provisions not utilised, will be added to Guyana’s carbon registry following the end of a crediting period.
- Inclusion of provision (subject to refinements) remaining forest.

Evolving markets will be kept under review but as of late 2021, the two market-based mechanisms that may deliver against Guyana’s objectives for jurisdiction-scale approaches, aligned with global REDD+ targets, are:

- **ART-TREES - The Architecture for REDD+ Transactions (ART)** has been developed to foster the environmental integrity needed for REDD+ emission reductions and removals (ERRs) at national and jurisdictional scale. ART provides a credible standard and rigorous process to transparently register, verify, and issue REDD+ emission reduction and removal credits that ensure environmental and social integrity. ART also aims to unlock new long-term financial flows to protect and restore forests.
- **VCS-JNR** - As one of the leading voluntary carbon market standards, VCS provides an avenue for nesting of project level activities on reforestation within Guyana’s carbon market structure and potentially, future integration of relevant HFLD aspects which may be adopted by these and similar standards. Nested project will be facilitated to include private sector engagement.



# APPENDIX TWO – ART-TREES

## 1. Background to TREES

The REDD+ Environmental Excellence Standard (TREES) sets out ART requirements for the quantification, monitoring, and reporting of GHG emissions and removals; demonstration of implementation of the Cancún Safeguards; and verification, registration, and issuance of TREES credits. TREES has been designed to ensure that all TREES credits issued are real, measured, permanent, additional, net of leakage, verified by an accredited independent third party, and are not double-counted. As a result, TREES credits will represent high quality, while still allowing flexibility for implementation of REDD+ programmes at a national level or subnational as an interim measure.

Unlike other forest carbon accreditation programmes, ART includes a module for recognising carbon stored within High Forest Cover Low Deforestation (HFLD) countries and offers a dedicated recognition within the crediting programme that includes forest carbon protection. Most carbon accreditation programmes provide payments for restoring forests that were lost.

## 2. ART-TREES Valuation of Guyana's Forest Climate Services

The ART-TREES valuation of Guyana's ecosystem services focuses on carbon valuation. In summary, the valuation adopts ART TREES V2 HFLD (High Forest Cover Low Deforestation) approach which computes crediting level of carbon units for sale using a formula:

$$\begin{aligned} & \text{Historical Emissions for Past 5 years from the forestry sector} \\ & + \\ & (\text{HFLD Score} \times 0.05\% \text{ of country forest carbon stock}) \end{aligned}$$

While the ART-TREES mechanism does not yet include all aspects of what Guyana believes is needed for a robust, globally-applicable market mechanism, it is believed to provide a sound foundation for the next phase of Guyana's market integration. A summary of ART-TREES performance against Guyana's target methodology is set out in the table below.

GUYANA'S FOREST CARBON FINANCING MECHANISM	ART-TREES	FURTHER WORK NEEDED
<b>Includes incentives for Reducing Deforestation</b>	Yes	No
<b>Includes Incentives for Forest Restoration</b>	Yes	No
<b>Includes Incentives for Forest Conservation</b>	Yes	No
Includes Incentives for GHG Removals	Forest Remaining Forest excluded from current structure.	Yes
<b>Use of HFLD Score</b>	<b>Yes</b>	<b>No</b>
Multiplier for Forest Carbon Stock applied at 0.1%	Multiplier for Forest Carbon Stock applied at 0.05%.	Yes
Forest Carbon stock to include all carbon pools appropriately adjusted for uncertainty.	Forest Carbon stock excludes soil, deadwood and litter.	Yes
Historical Average to cover the immediate historical period of 15 years.	Historical average determined by previous five years.	Yes

A key gap where Guyana believes ART needs to pursue further work in collaboration with Guyana and other forest countries, is to address removals. Under ART-TREES, sinks provided by 'forests remaining forests' in REDD+ are not currently valued, but they are significant in scale, are expected to continue functioning decades into the future if undisturbed, and face increasing threats. A mechanism is needed that explicitly gives a value to actions that maintain these sinks.

Despite this and other areas for future improvement, the methodology provides the potential for Guyana's next phase of market integration while the short-comings are addressed. The detailed calculation of Guyana's reference level, as well as the next steps in the ART process, are set out below.

### 3. Detailed Calculation

#### Guyana’s HFLD Score

The HFLD Score is the sum of the Guyana’s Forest Cover Score and Guyana’s Deforestation Rate Score, expressed as a unit value.

Guyana’s 2020 Forest cover = 83.7%  
 Guyana’s deforestation rate 2016-20 = 0.060%  
 Expressed as a unit value, Guyana’s HFLD Score is = 0.8

#### Guyana’s Historical Emission for Past 5 Years

Guyana’s MRVS Report 2020, has reported historical emissions for the past five years as 15,068,951tCO<sub>2</sub>.

#### Carbon Credits

Crediting levels are computed under ART TREES using the equation:

$$\begin{aligned} & \text{Historical emissions for past five years from the forestry sector} \\ & + \\ & (\text{HFLD Score} \times 0.05\% \text{ of country forest carbon stock}) \end{aligned}$$

Gives Results in tons of CO<sub>2</sub>:

$$\begin{aligned} & 15,068,951 \text{ tCO}_2 + (0.8 \times (0.05\% \text{ of } 17,196,304,923 \text{ tCO}_2)) \\ & = 21,947,473 \text{ tCO}_2 \end{aligned}$$

## 2.3 Additionality and Maintaining Environmental Integrity

To ensure environmental integrity, the following additional provisions will be made. Credits will be reduced if:

ACTUAL GROSS EMISSIONS EXCEEDING 25% FROM HISTORICAL LEVEL	ACTUAL GROSS EMISSIONS EXCEEDING 35% FROM HISTORICAL LEVEL	ACTUAL GROSS EMISSIONS EXCEEDING 45% FROM HISTORICAL LEVEL	ACTUAL GROSS EMISSIONS EXCEEDING 55% FROM HISTORICAL LEVEL	ACTUAL GROSS EMISSIONS EXCEEDING 65% FROM HISTORICAL LEVEL	---	ACTUAL GROSS EMISSIONS DOUBLING HISTORICAL LEVEL
Reduced by 10% on crediting level	Reduced by 15% on crediting level	Reduced by 20% on crediting level	Reduced by 25% on crediting level	Reduced by 30% on crediting level	...	No payments



**Provisions for Reversal Buffers:** If emissions exceed the Crediting Level, it is considered a reversal and is compensated by retiring buffer credits. If reported emissions are above the 15-year emissions average by greater than 15 percent, an additional deduction is taken from the final ERs.

**Provisions for Uncertainty (based on Monte Carlo Analysis):** Estimates of emission reductions and removals are adjusted based on estimated uncertainty to minimise the risk of over-crediting. Countries endeavor to minimise all forms of uncertainty. Uncertainty will be quantified in terms of the half-width of the 90% confidence interval as a percentage of the estimated emissions.

## 2.5 Issuance of credits

Credits will be issued under the Guyana Carbon Registry and any other structure that is associated with the Guyana credit issuance.

### Payment Scenarios

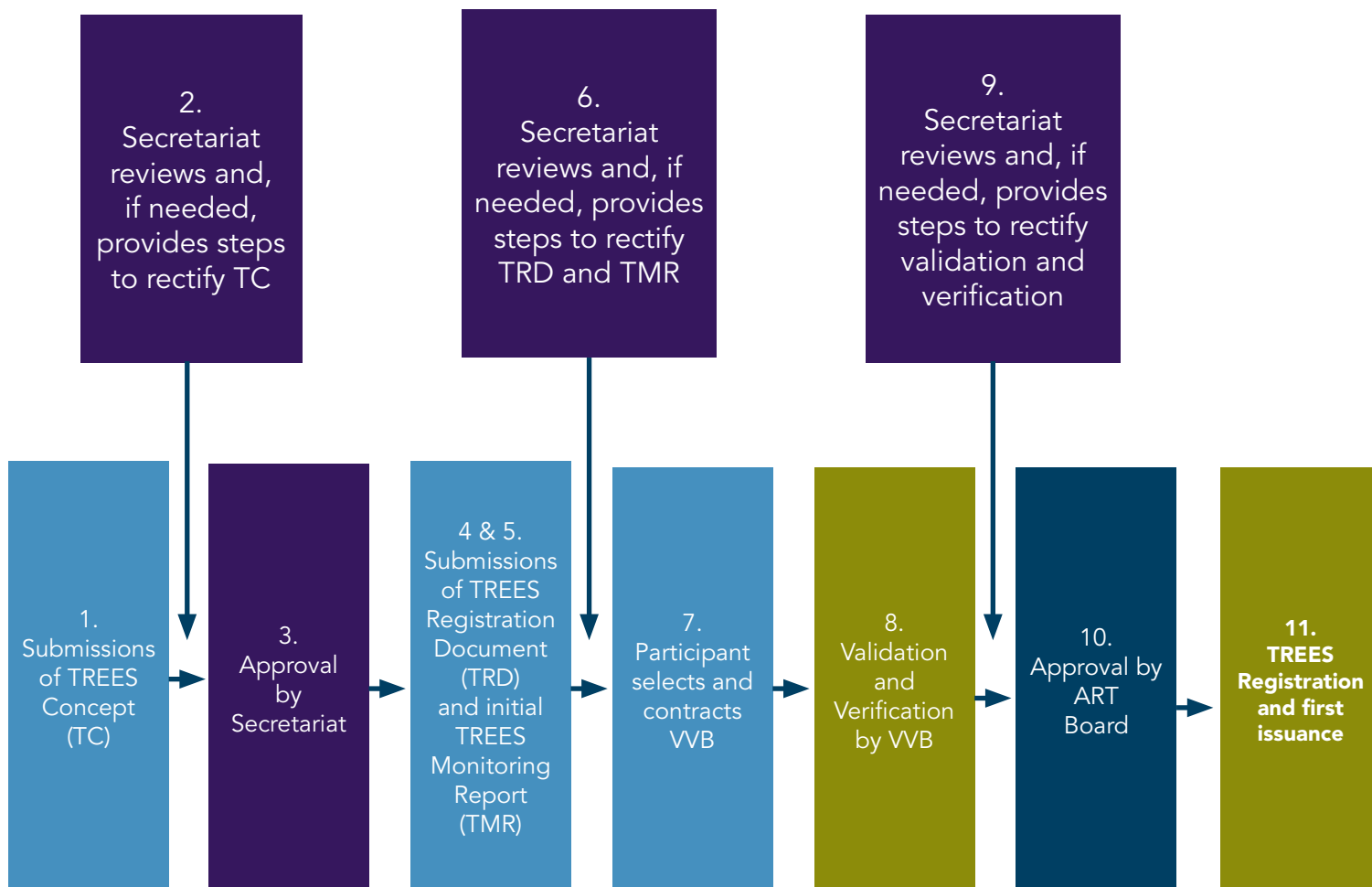
FOREST VALUATION BASED ON CARBON MARKET POTENTIAL					
CASE YEAR PRESENTED - YEAR 2021					
CREDITING LEVEL (TCO2)	PROJECTED EMISSIONS LEVEL (TCO2)	EMISSIONS REDUCTIONS (TCO2)	PAYMENT LEVEL AT US\$10 PER TON/CO2	PAYMENT LEVEL AT US\$20 PER TON/CO2	PAYMENT LEVEL AT US\$30 PER TON/CO2
21,947,473	13,000,000	8,947,473	89,474,730	178,949,459	268,424,189

### Provisions for Amaila Falls Hydro Power Project

The development of Guyana’s Amaila Falls Hydropower Project (including road line, transmission line corridor and dam extent) is expected to impact approximately a quarter of one percent of Guyana’s forest, and this expectation has been integrated into Guyana’s LDCA, since it was first launched. Given the centrality of Amaila Falls Hydropower to Guyana’s clean energy goals as outlined in Chapter Four, provisions were made to support its development within the Guyana-Norway partnership. The precedent established under the Guyana-Norway partnership will be carried forward into ART-TREES.

## 2.1 The ART Process

The process to enter ART using TREES requires approval of a TREES Concept, a successful initial Validation and Verification, and TREES Registration. Guyana will be required to submit documents and gain approval for each of the stages above to reach the final step of issuance of the approved credits to be sold. The eleven (11) steps involved in the ART process are outlined below:



**The steps that Guyana will be required to follow as summarised in the diagram above is as follows:**

1. The participant submits a TREES Concept to the Secretariat for review. Guyana completed this step in December, 2020.
2. The ART Secretariat reviews the TREES Concept for completeness and will request revisions as needed. Guyana completed this step in December, 2020.

3. The Secretariat approves the inclusion of the participant in ART. Guyana has completed this step in December, 2020.
4. Following approval, the participant's TREES Concept is referenced in the ART Registry as listed. Guyana is listed on the ART Registry.
5. The participant submits the TREES Registration Document and the initial TREES Monitoring Report covering the initial calendar year(s) to the Secretariat for a completeness check. These documents are prepared in draft for submission for periods 2016 to 2020 and 2021 to 2025 have been developed in draft to be submitted by end of September 2021.
6. The Secretariat reviews the TREES Registration Document and TREES Monitoring Report for completeness and will request revisions as needed. The Secretariat then approves the TREES Registration Document and TREES Monitoring Report for validation and verification.
7. The participant selects a Validation and Verification Body from the list of approved ART Validation and Verification Bodies maintained on the ART website. The participant solicits bids and negotiates contracts directly with the selected Validation and Verification Body (VVB). The selection process will include a disclosure of conflicts of interest and mitigation measures, if conflicts are identified.
8. The Validation and Verification Body conducts the validation of the TREES Registration Document and the verification of the TREES Monitoring Report in line with the requirements of the TREES Validation and Verification Standard.
9. The Validation and Verification Body submits the Validation and Verification Report and Verification Statement to the Secretariat who reviews the documents to ensure completeness. The Secretariat will request revisions as needed.
10. The Secretariat submits the participant's final package and a recommendation to the ART Board for approval. The Board requests additional information as appropriate and approves the credit issuance.
11. Following Board approval, the participant's TREES Registration Document and Monitoring Report are referenced in the ART Registry as Registered and TREES credits are issued based on the initial verification. For countries like Guyana, which have demonstrated conformance with the High Forest /Low Deforestation (HFLD) criteria and have used the HFLD crediting approach, TREES credits issued will be labeled as HFLD.



The HFLD crediting approach is explained below.

### 3.1 Eligibility to Participate as HFLD in ART

Participation in ART can take one of two tracks. The first focuses on reducing deforestation and being credited for doing so. As Guyana has maintained low deforestation rates and emissions levels, this avenue will yield very low benefits for Guyana.

The second track (the HFLD participation) allows for the maintained low rates of deforestation rates and emissions level to be factored into the determination of crediting level for payment. Conceptually, this track offers a more beneficial structure for Guyana as an HFLD country.

To be eligible to participate in ART as an HFLD country, the HFLD score threshold must be met. The HFLD Score is therefore a central part of the HFLD crediting approach and comprise the main eligibility criterion, and also is a main part of the formula used for computing the crediting level.

The HFLD Score is the sum of the Participant’s Forest Cover Score and the Participant’s Deforestation Rate Score as exemplified in the figures below and outlined in the equations in 4.1 below. Participants whose HFLD Score is 0.5 or higher for each year of the reference period meet the HFLD Score threshold and are considered HFLD participants under ART.

$$\text{HFLD Score}_t = \text{FCS}_t + \text{DRS}_t$$

**WHERE**

<b>HFLD Score<sub>t</sub></b>	<b>HFLD Score in year t</b>
<b>FCS<sub>t</sub></b>	<b>Forest Cover Score in year t (Equation 3)</b>
<b>DRS<sub>t</sub></b>	<b>Deforestation Rate Score in year t (Equation 4)</b>

### 4.1 The ART TREES HFLD Crediting Methodology

The HFLD Crediting Level will be calculated in accordance with the formula presented in Equation 5. The TREES Crediting Level is first calculated (emissions crediting level from the average of emissions during a historical period of five years with no overlaps with crediting period and no gaps). This crediting level is then adjusted based on Guyana’s HFLD Score and forest carbon stocks to determine the HFLD Crediting Level.

$$\text{HFLDCL}_n = \text{CL}_n + (\text{HFLD Score}_{\text{avg}} * \text{Carbon Stock})$$

**WHERE**

<b>HFLDCL<sub>n</sub></b>	<b>HFLD Crediting Level for crediting period n; CO<sub>2</sub>e/yr</b>
<b>CL<sub>n</sub></b>	<b>Crediting Level for crediting period n; CO<sub>2</sub>e/yr (Section 5.1)</b>
<b>HFLD Score<sub>avg</sub></b>	<b>HFLD Score averaged across reference period (Section 5.2.1)</b>
<b>Carbon Stock</b>	<b>0.05% of Standing Forest Carbon Stock withing jurisdiction</b>

## 4.2 Additional Provisions

### 4.2.1 Reversal Risk Assessment

TREES establishes a starting level of reversal risk for participants of 25 percent. The starting risk level may be lowered if participants can demonstrate that mitigating factors exist. The risk level is associated with a buffer deduction taken from the final verified TREES ERR quantity prior to each issuance.

Guyana is required to provide for the number of TREES credits that will be contributed to the buffer at each issuance. Each monitoring report must identify the buffer contribution and all justifications for the contribution for each year reported. Performance payment in Chapter Three provides for reversal buffers from identified amounts.

### 4.2.2 Uncertainty Assessment

TREES requires that estimates of emission reductions and removals are adjusted based on estimated uncertainty to minimise the risk of over-crediting. Participants are required to endeavour to minimise all forms of uncertainty. Requirements to track uncertainty and to avoid systematic bias must also be included in country submissions.

Under TREES, uncertainty is quantified in terms of the half-width of the 90 percent confidence interval as a percentage of the estimated emissions. Sampling errors must be estimated and included in the uncertainty calculation.

Model and allometric errors are excluded; as such errors are considered consistent between emissions in the crediting level and crediting periods.

Uncertainty is required to be assessed on both activity data and emission factors. Errors need to be propagated between sources using Approach 2 (Monte Carlo simulation). Monte Carlo simulations are required to use the 90 percent confidence interval and

a simulation n of 10,000. The bootstrapping method is allowed to be used where the probability density function is unknown. The simulations will form the basis for estimations both of value and uncertainty at each step, as the simulated sum of components will be more accurate than an arithmetic approach.

#### **4.2.3 HFLD Annual Emissions Increase Deduction**

For each year of the Crediting Period, HFLD Participants are required to compare their total reported annual emissions. If the total annual emissions exceed the crediting level, a deduction must be applied to the total credits generated. The deductions are as follows:

### **5.1 ENVIRONMENTAL, SOCIAL, AND GOVERNANCE SAFEGUARDS**

TREES requires Participants to demonstrate they have implemented REDD+ actions defined in the REDD+ implementation plan consistent with Cancún Safeguards ensuring activities do no harm. It is the goal of this Standard to provide concrete guidance on how a participant can demonstrate that it has addressed and respected all the Cancún Safeguards, while drawing on the step-wise nature of REDD+ implementation.

### **6.1 REGISTRY REQUIREMENTS/ACCOUNT REQUIREMENTS**

All participants, including Guyana, will have an account in the ART Registry, managed by the ART Secretariat. The ART Registry will contain country information, documentation, Validation and Verification Reports, records of serialised credit issuance, and credit cancellation, transfer, and retirement data. The Secretariat will also manage a pooled reversals buffer account in the ART Registry which will be publicly available.

### **7.1 PUBLICLY AVAILABLE DOCUMENTATION**

All approved and final TREES documents will be publicly available through the ART Registry. Participants may designate certain parts of the documentation as Commercially Sensitive Information (CSI). In these cases, redacted versions of TREES documentation can be made publicly available. However, this information—as well as any requested supporting documentation—must be available for review by the Secretariat and Board and the Validation and Verification Body (VVB).



# APPENDIX THREE

## THE GUYANA-NORWAY PARTNERSHIP

When it was agreed, the Guyana-Norway partnership was the second largest Interim REDD+ arrangement in the world - and for performance in the period 2009 to 2015, Guyana received a total of US\$212.52 million dollars in payments to be invested in the LCDS.

In the absence of a UNFCCC REDD+ mechanism, Guyana and Norway sought to create a globally replicable model for a likely REDD+ mechanism. The model was built from nine building blocks. Together, they fulfilled three core functions:

1. Earning Payments – Guyana was paid using a calculation based on independently verified delivery of forest climate services;
2. Managing Payments – the Guyana REDD+ Investment Fund (GRIF), hosted by the World Bank, was the principal financial intermediary with an IDB Renewable Energy Account providing similar services; and,
3. Investing Payments – the process for funding LCDS projects through a set of mutually agreed Partner Entities.

The Programme has been and continues to be an overall success. However, a few areas that have impacted its effectiveness include the slow pace of intermediation for transfer of resources, mixed successes working with partner entities, and slow pace in some cases of national implementation bodies.

### Earning and Managing Payments

The following table summarises Guyana’s earnings, plus associated investment income.

	ACTUAL PAYMENT (USD)
2009 Performance Payment	30,355,594
2010 Performance Payment	39,474,415
2011 Performance Payment	Combined with following year
2012 Performance Payment	80,034,965
2013 Performance Payment	43,886,657
Direct Disbursement for Capacity Building and EU-FLEGT Projects	14,815,886
Awaiting Disbursement from Norway	4,000,000
<b>TOTAL RECEIVED FROM NORWAY</b>	<b>212,597,518</b>
Investment Income – GRIF (World Bank Trustee Account)	3,200,000
Investment Income – IDB Renewable Energy Account	5,100,000
<b>TOTAL AMOUNT AVAILABLE FOR INVESTMENT IN LCDS</b>	<b>220,800,000</b>

# Investments made from Guyana-Norway Partnership Payments

The following table summarises Guyana's earnings plus associated investment income.

2013 LCDS THEME	PROJECT	ALLOCATION (US\$ MILLION)	EXPENDITURE (US\$ MILLION)	2021 STATUS
High Potential Low Carbon Sectors	Micro and Small Enterprise Development	5.1	5.1	COMPLETE
Hinterland Development	Amerindian Development Fund – Phases I and II	8.1	8.1	COMPLETE
	Amerindian Land Titling	10.8	3.3	ONGOING
Human Capital	Institutional Strengthening	6.4	6.3	COMPLETE
Adaptation and Resilience	Cunha Canal Rehabilitation	3.4	3.3	COMPLETE
	Climate Resilience Strategy and Action Plan	0.3	0.3	COMPLETE
Digital Infrastructure	ICT Access and e-Services, for Hinterland, Poor, and Remote Communities	17.0	4.2	ONGOING
Governance	Transforming Forest Management – MRV System	12.6	12.6	COMPLETE
	Support for EU-FLEGT Implementation	1.7	1.7	COMPLETE
	Sustainable Land Use Development and Management	14.8	5.2	ONGOING
Communication	LCDS Communication and Outreach	1.2	0.2	COMPLETE
Renewable Energy	Solar Power across various Regions	85	0	COMMENCING
<b>TOTAL</b>		<b>166.4</b>	<b>50.4</b>	

# Support for Micro and Small Enterprise and Vulnerable Groups' Low-Carbon Livelihoods

The Micro and Small Enterprise Development and Building Alternative Livelihoods for Vulnerable Groups 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 livelihoods in Guyana: i) limited access to finance and ii) limited technical and business skills.

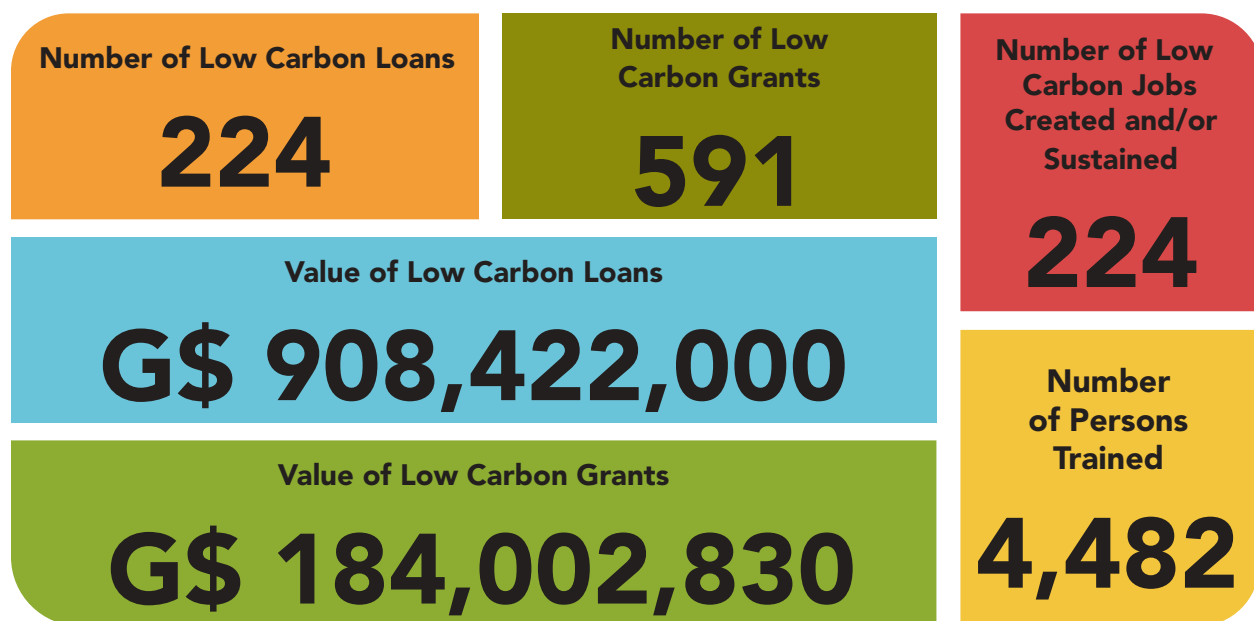
Access to finance was addressed through (i) a credit guarantee facility where the project guaranteed at first 40%, and later up to 70%, of the collateral requirements for loans at participating financial institutions and (ii) a grant scheme to assist vulnerable persons with viable business propositions. The Government also worked with participating Commercial Banks to lower their interest rates from a range of 14% to 26% all the way to six percent for any entrepreneur who was approved for a loan for their low carbon venture under the project.

Lack of skills was addressed through a training voucher scheme which enabled MSEs to obtain necessary skills at existing training institutions. The project targeted MSEs who were in or who wished to transition to low carbon sectors. Seventeen low-carbon sectors were funded under the project:

- Two hundred and twenty-four loans were approved at a value of US\$ 4,339,138 or approximately G\$ 908,422,000. The percentage of loans by sector were as follows: 46.9% in professional and business services; 9.8% in fruits and vegetables; 12.1% in agriculture and agro-processing; 15.2% in arts and crafts; 5.4% in manufacturing activities; 2.2% in internet and computer based services; 2.2% in eco-tourism; 1.8% in sustainable forestry and wood processing; 0.9% in entertainment, music and the performing arts, 1.3% in aquaculture, 0.4% in apiculture, 0.4% in energy efficient transportation and logistics, 0.4% in low carbon energy production/distribution, 0.9% in publishing and printing. Males represented 61% of the loan beneficiaries and females, 39%.
- Five hundred and ninety-one grants were approved at a value of US\$ 891,055 or approximately G\$ 184,002,830. The percentage of grants by sector were as follows: 40.6% in professional and business services; 22.8% in agriculture and agro-processing; 16.2% in fruits and vegetables; 6.8% in arts and crafts; 4.7% in manufacturing activities; 4.2% in internet and computer based activities; 1.0% in apiculture; 0.8% in sustainable forestry and wood processing; 1.0% in entertainment music and performing arts; 0.5% in eco-tourism; 0.8% in publishing and printing; and 0.3% in aquaculture). Males represented 38% of grant beneficiaries and females, 62%.
- A total of 4,482 people were trained 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,



plumbing, videography, photography, cosmetology, cookery, and craft. A total of 2,101 jobs were sustained and/or created in low-carbon sectors by the loans and grants under the micro and small enterprise development project (1,217 jobs from grants and 884 from loans).



## AMERINDIAN DEVELOPMENT FUND PROJECT

The socio-economic development of Amerindians was supported through the implementation of two separate phases of the Amerindian Development Fund (ADF) project which funded the implementation of the Community Development Plans (CDPs) of Amerindian communities and villages.

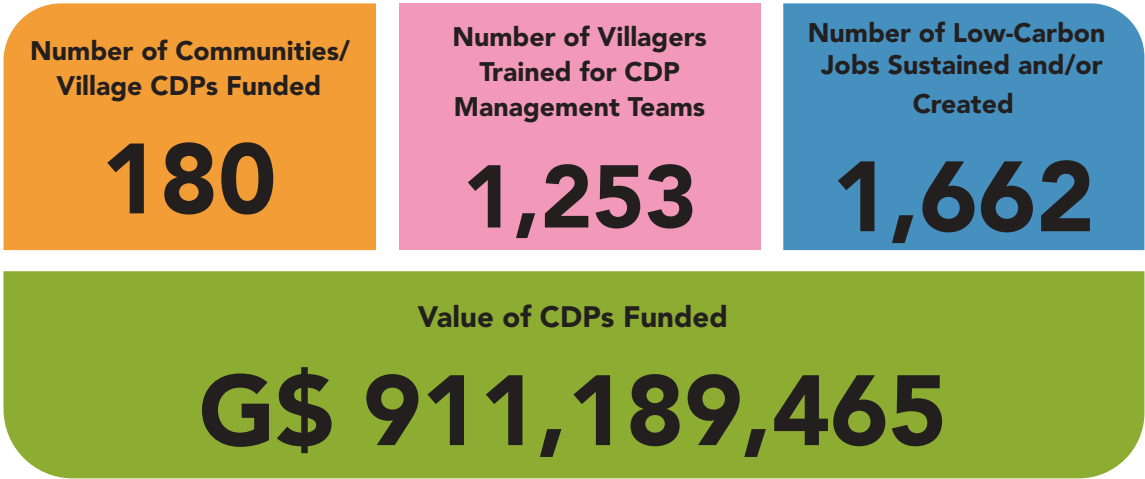
The development of the CDPs was led by the communities and villages and approved at their Council meetings. The first phase funded 26 communities and villages and the second phase funded 154 communities and villages. The project aimed to strengthen the entrepreneurial and institutional capabilities of 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. CDPs implemented were categorised under the following sectors: agriculture, village infrastructure, tourism, manufacturing, village business enterprise, and transportation.

Between both phases of the project, the CDPs of 180 communities and villages were funded and implemented at an approximate value of US\$4,412,540 or G\$911,189,465.

To support the sustainability of CDPs, the project sought to improve linkages with the private sector to further develop value chains and strengthen institutional frameworks to support local economies. 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 (GCCl); and the Guyana Energy Agency (GEA) were made. Workshops and seminars were held, along with technical capacity building sessions for communities and villages. The CDP database generated over the life of the project was also shared with various agencies and institutions. The database lists all grant recipients, types of CDPs, typologies, villages, tranches disbursed, dates, population, and other particulars.

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.

In addition to the various training and capacity building sessions, support was also given to specific CDPs based on needs assessment, in the form of intensive Cluster Training Sessions in cattle management, fish culture, business operations and woodworking.





Cattle rearing at Kurukabaru



Village Shop in Princeville



Cassava Processed Products in Tiger Pond



Guest house built in Karasbi

## AMERINDIAN LAND TITLING

Amerindians total approximately 14 percent of Guyana's population and currently own in excess of 15.65 percent of Guyana's territory, up from about six percent in the early 1990s.

The Amerindian Land Titling (ALT) Project, which is ongoing, seeks to accelerate the legal demarcation and titling of Amerindian lands. 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.

### Under the ALT project:

- Thirteen villages were issued with absolute grants, bringing the total number of Amerindian villages titled with Absolute Grants to 109
- Twenty-one villages were demarcated and 19 were issued with certificates of title in what is the final step in the titling process. This brought the total number of villages demarcated and issued with Certificates of Titling to 96.

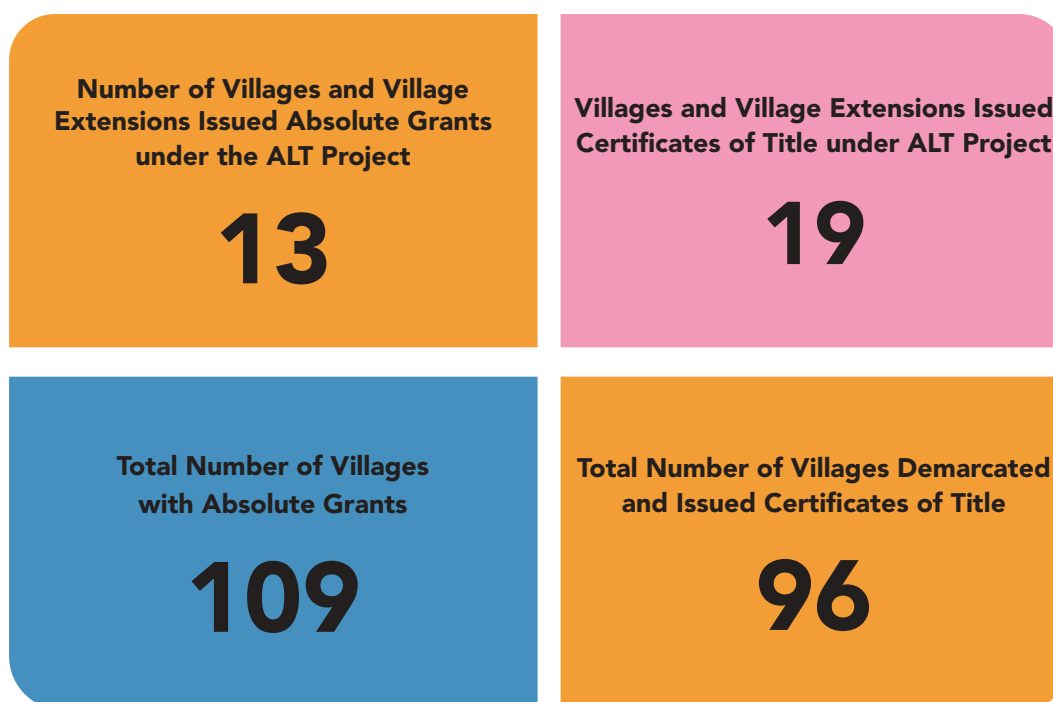


The principle of Free, Prior and Informed Consent (FPIC) continues to be an important and respected principle that is applied to ensure that under the project, Amerindians are provided with enough information well in advance of planned or proposed activities to allow communities and villages to agree or consent to the execution of those activities.

Under the project, over 210 persons were trained in FPIC to ensure that not only do Amerindians understand the rights that are theirs 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 on the titling process), 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. Twenty-three persons were trained as GRM liaisons, 254 community members were trained in mediation and 328 persons were part of cluster awareness exercises on the core function of the GRM.





Little Kaniballi-Santa Cruz Village General Meeting examining maps of requested extension with MoAA Team and Sworn Land Surveyors



Participants at the Santa Rosa Village General Meeting along with MoAA Team as part of the consultative investigation on village extension request

## INSTITUTIONAL STRENGTHENING IN SUPPORT OF GUYANA'S LCDS

The Institutional Capacity in Support of Guyana's LCDS project was implemented to further enhance national institutional capacity in Guyana to address the impacts of Climate Change through the effective implementation of the LCDS, and to assist Guyana in meeting its commitments under interim REDD+ partnerships. The specific objectives of the project were: (i) to strengthen the technical and administrative capacity of the principal institutions responsible for implementing Guyana's Low Carbon Development Strategy, namely the Office of Climate Change (OCC), the Project Management Office (PMO) and the Guyana Forestry Commission (GFC); and (ii) develop and implement a Monitoring Reporting and Verification System on a national level.

### Under the project:

- A total of 156 communication and outreach sessions on climate change, the LCDS and REDD+ were conducted;
- The development and implementation of a mechanism for a national scale Monitoring, Reporting and Verification System was supported;
- 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 REDD+ Secretariat, 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 Guyana Forestry Commission, including: Assessment Report in Current Drivers and Processes Affecting Forest Carbon; Report on Independent Forest Monitoring; MRVS

Interim Measures Report for Year Three; Report on Identification of Non-Carbon Ecosystem Services for Integration into Guyana's National MRVS Assessment; Report on Shifting Agriculture; Report on Assessment of Requirements of a Monitoring System for Carbon as well as Non-Carbon Variables;

- A strategy for a national scale Opt-in Mechanism was completed. The Opt-in Mechanism is viewed as an innovative approach intended to help Amerindians to "opt-in" to the national REDD+ mechanism.
- An institutional diagnostic study of the Environmental Protection Agency was completed.

## **CUNHA CANAL REHABILITATION PROJECT**

About 39% of Guyana's population and 43% of GDP are in regions exposed to significant flooding risk, and extreme weather events that are increasing in frequency. These extreme weather events – including the floods of 2005 – demonstrated the significance of the risks posed by inhibited drainage capacity of the East Demerara Water Conservancy (EDWC) which is one of Guyana's most important natural drainage and irrigation and flood control mechanisms.

The EDWC is a large shallow reservoir that covers an area of 571KM<sup>2</sup> and stores approximately 250 million cubic metres of water at the maximum safe operating level. The EDWC protects various parts of Guyana, including Georgetown, the East Coast and East Bank areas – preventing flooding and providing agricultural lands and urban areas with irrigation and drinking water.

The Cunha Canal is one of the canals or channels that supports the drainage of the EDWC into the Demerara River and helps to prevent the risk of water levels exceeding the safe operating level of the EDWC dam through overtopping or catastrophic breaching and flooding.

Around 1990, the Cunha Canal was diverted from its original alignment to a smaller discharge channel. This diversion reduced the discharge capacity of the canal, and it went into disuse soon afterwards. The discharge through the canal was re-established during the 2005 flood but with a limited capacity as it was affected by circuitous routing and structural limitations.





The Cunha Canal Rehabilitation project was a major adaptation project to increase the capacity of the canal to drain the EDWC, as well as local agricultural areas surrounding the canal. The project aimed to support a more climate resilient economy in Guyana, reduce the vulnerability of catastrophic flooding in Guyana's low-lying coastal area, and prevent significant losses to human lives, crops, and livestock.



The Cunha Canal Rehabilitation Project included: (i) the re-routing of the canal along its original straight alignment, widening it to approximately 66 feet, and excavating to remove the build-up of sediments and weeds to allow for a straight flow into the Demerara River that eliminates hydraulic restrictions; (ii) rehabilitation of the former outlet structure or sluice to control the discharge of water and prevent river water from entering the canal during high tide; and (iii) the construction of a bridge on the East Bank of Demerara Public Road where the canal intercepts the road.

**Aerial view of Cunha Canal**



	Rehabilitation of the existing channel
	Construction of straight alignment along original path
	Inefficiently aligned channel discontinued under project
	Public Road Bridge

## **CLIMATE RESILIENCE STRATEGY AND ACTION PLAN**

The adverse, and potentially catastrophic impacts of climate change are already being experienced in Guyana. Since the 1960s, Guyana has observed marked increases in temperatures, sea levels and the frequency and intensity of extreme rainfall events. The impacts on Guyanese people, society, economy and environment during flooding events in 2005, 2006, 2008, 2010, 2011, 2013, 2014 and 2015 and the droughts of 1997-1998, 2009-2010 and 2015-2016 are poignant examples of the devastation climate change may cause. Flooding in 2005, for example, caused damage estimated at US\$465 million (60% of GDP at that point) and during the drought in April 2015 potable water had to be trucked into communities in Regions One and Nine. Guyana has been described as

being ‘particularly vulnerable’ to climate change because of high levels of exposure and sensitivity to climate risks and limited capacity to adapt.

The Climate Resilience Strategy and Action Plan (CRSAP) identified key climate risks and priority resilience building actions and aimed to provide a comprehensive and overarching framework for adapting and building resilience to climate change impacts. The Strategy and Action Plan are underpinned by the five cross-cutting pillars of adaptation identified in Guyana’s Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), namely information, research and systematic observation; institutions and capacity building; policy and legal frameworks; infrastructure and technology; and finance.

The CRSAP identified that climate change will create serious and high magnitude risks for all 15 sectors assessed in Guyana. There are 43 serious risks that are relevant now and projected for the 2030s, with four additional serious risks projected for the 2030s only. These serious risks are spread across 13 different sectors. Seventeen risks could have catastrophic impacts and a further 22 risks are almost certain to occur. Four risks have been identified with the combination of catastrophic consequences and almost certain likelihood; these are found in the agriculture, indigenous peoples and housing sectors.

These risks can, however, be mitigated and the CRSAP identified sectoral resilience objectives and actions to address all risks highlighted that are relevant now and into the 2030s. Work will commence on implementing the resilience objectives aimed at addressing risks based on identified risk level and priority.

## **ICT ACCESS AND E-SERVICES FOR HINTERLAND, POOR, AND REMOTE COMMUNITIES**

Fostering sustainable development in the Hinterland and vulnerable areas is one of the core priority outcomes of Guyana’s Low Carbon Development Strategy (LCDS). A key component in achieving such an outcome is the provision of public services and information via the deployment and use of new Information and Communications Technologies (ICTs).

The ICT Access and e-Services for Hinterland, Poor, and Remote Communities Project is still ongoing and aims to provide the necessary infrastructure, equipment, hardware, and software necessary to enable access to high-quality ICT, training and e-services in all parts of Guyana, with particular attention given to vulnerable groups and remote communities who might otherwise be excluded. The project will provide the supporting capacity to create linkages to generate inter-sectoral benefits in areas such as education, health and business. The goals of the project include the development of a digital

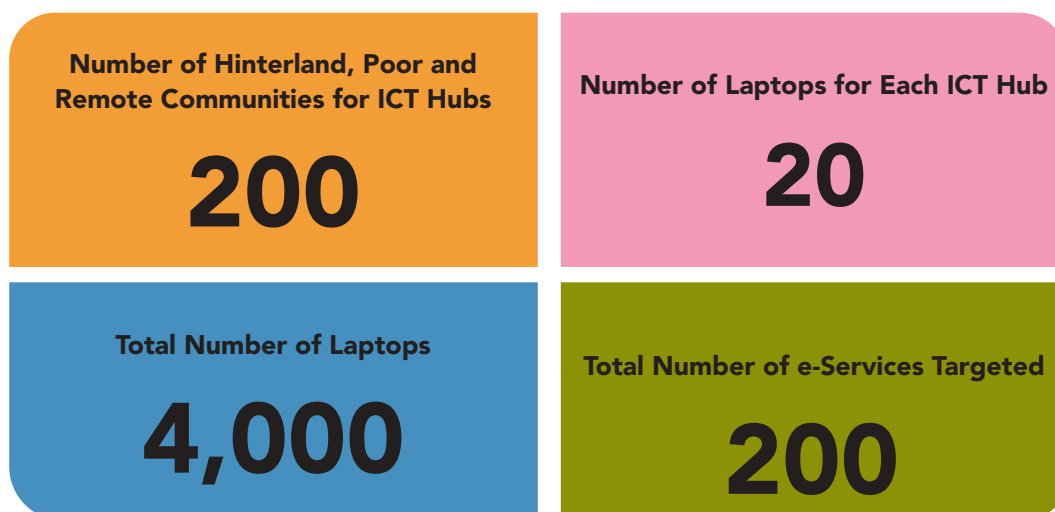
knowledge-based society, enhancement of national efficiency and competitiveness, and the promotion of inclusive and sustainable growth and development.

Ninety Very Small Aperture Terminals (VSATs) — which are two-way satellite ground stations with a dish antenna used to provide internet access to remote locations — were procured and installed in communities and villages. 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.

From 2021, ICT hubs will be established in 200 communities and villages. Each hub will be equipped with printers and televisions, as well as 20 laptops and software.

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 multi-dimensional capacity assessment of public institutions that will offer e-services, identifying gaps and bottlenecks in the process. The following reports were completed:

1. Baseline Report focused on market research looking at Guyana's profile, education, health, business, and as-is analysis of technical infrastructure and regulation;
2. 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;
3. 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.





# **SUPPORT FOR THE GUYANA FORESTRY COMMISSION'S MONITORING REPORTING AND VERIFICATION SYSTEM (MRVS)**

The Joint Concept Note (JCN) between the Government of Guyana (GoG) and the Government of the Kingdom of Norway identified the stepwise and progressive development of Guyana's Monitoring Reporting and Verification System (MRVS) and outlined the mechanism for receiving financial payments for Guyana's provision of forest carbon-based services. These payments are result-based and dependent upon, among other indicators, deforestation and forest degradation measured against an agreed reference level.

While the project had several stages over nine years, the overall goal of the project in the initial years - 2010 to 2015 - was to establish a sustained MRVS for implementing REDD+ policies and to receive results-based compensation for such activities in the long-term in a way that built the capacity of the GFC, contributed to Guyana's low-carbon development pathway, and supported the sustainable development of natural resources. More specifically, the project aimed to further build capacity in the GFC to carry out forest cover and change monitoring and forest carbon monitoring/measurement in fulfillment of the MRVS Roadmap and to build stakeholder awareness and participation in the successful design and implementation of the MRVS as an essential tool for the implementation of the LCDS, and in overall sustainable forest management.

The continued development and implementation of Guyana's MRVS for 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.

Over the years Guyana's MRVS has become an internationally acclaimed model, viewed as one of the best globally. Over the years the following were important areas of achievements under the projects:

- Mapping and assessment of changes in forest area were conducted;
- Satellite data coverage of Guyana at a national scale was acquired;
- Independent accuracy assessments for forest maps and change estimates were conducted;
- A systematic national forest carbon measurement system was designed and implemented;

- Emission factors for main forest degradation drivers were established and uncertainty assessments conducted;
- Areas for future development of the MRVS to include additional aspects and to reduce uncertainties and efficiencies were assessed;
- The use of evolving technologies for REDD+ within Guyana’s MRVS was explored;
- Modelling activities to inform a reference level for REDD+ for Guyana was conducted;
- The methodology for treatment of shifting cultivation was improved;
- Foundations and data sources for a REDD+ safeguard information system were developed.

## **SUSTAINABLE LAND DEVELOPMENT AND MANAGEMENT PROJECT**

The Sustainable Land Development and Management project remains ongoing. Its goal is to establish an enabling environment for promoting sustainable and climate-resilient land development, management and reclamation.

This will be achieved through, among other things, the development of a harmonised national land policy and legislative framework, strengthened capacity of the Guyana Lands and Surveys Commission (GLSC), the design and development of an integrated and robust spatial data infrastructure, as well as an open-data geospatial information system. The overall outcome will be to support improved land administration, enhanced governance of tenure, in addition to improved technical support services and mechanisms to encourage adoption of sustainable and climate-smart land use systems and management practices. The project will strengthen the application and enforcement of regulations, land use planning, incentive measures, knowledge sharing, as well as assessment and monitoring in line with the Sustainable Development Goals (SDGs).

### **Under the project:**

- Legal reviews of land related legislations have commenced and the legal capacity of GLSC was strengthened with law resources to support the GLSC Legal Division;
- The Standard Operating Procedures for Land Administration are pending revision to increase efficiency of land administration processes;
- The National Spatial Data Infrastructure (NSDI) Action Plan was completed and the National Spatial Data Infrastructure and geospatial platform is being established. This will enhance the accessibility, communication, and use of geospatial data to support a wide variety of evidence-based decisions at all levels to support sustainable land management in Guyana.

- The Session of the Committee for the Review of the Implementation of the Convention (CRIC 17) of the United Nations Convention to Combat Desertification (UNCCD) was hosted in Georgetown, and for the first time in the English-speaking Caribbean;
- Development commenced for the five-year Strategic and Business Plan for GLSC;
- The process of development for the National Land Policy was been initiated. Consultations with 27 government institutions were completed to identify land sector challenges, assess the policy demand and agree on a process and structure to develop the National Land Policy;
- The re-mapping of Guyana using LIDAR technology commenced;
- Land tenure information systems, processes and user capacities were reviewed;
- Infrastructural capacity of GLSC was increased through procurement of communications, IT, and other equipment;
- Human capacity of the GLSC was strengthened through recruitment, attendance of GLSC staff at international conferences and workshops, and enrollment in relevant diploma programmes at the University of Guyana;
- An MOU was signed between UG and GLSC for the delivery of a Diploma Programme in Land Administration;
- Regional outreaches were conducted in Regions three, four, six and 10 to address land tenure and governance issues for hundreds of citizens and clients of the Commission.









# **ALL GUYANESE CAN INPUT**

Please share your views at: [www.lcds.gov.gy](http://www.lcds.gov.gy)

