OCCASIONAL PAPER

The context of REDD+ in Guyana

Drivers, agents and institutions

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Photo by R Thomas
Guyana Forest Canopy

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Executive summary

This Guyana REDD+ country profile provides contextual analysis on conditions which affect the REDD+ policy environment in the country. It is based on reviews of existing literature, national and international data, reviews of legal documents, and selected expert interviews. The country profile examines and discusses five areas: (1) drivers of deforestation; (2) the institutional environment; (3) the political economy of deforestation and forest degradation; (4) the political environment of REDD+, including actors, events and processes; and (5) implications of the country's current REDD+ design for effectiveness, efficiency and equity.

Drivers of deforestation

Systematic reporting on forest degradation started in 2010–2011. Total forest degradation for 2010–2016 was 27,903 hectares (ha) while deforestation since 1990 was estimated to be 151,822 ha. A major driver of deforestation and forest degradation is mineral mining, particularly gold mining. Forestry and agriculture are also drivers, but with less impact on the forest compared with mining. Many of Guyana's national policies, strategies, plans and actions do not aggravate deforestation and forest degradation and are likely to have a positive impact on REDD+. Conflicting claims of forestry with mining, whereby regulatory infrastructure places mining rights above other land uses, is the main underlying cause for deforestation and forest degradation. Lack of clear tenure is another. While forested land is largely owned by the state, the legal basis of land ownership and titling for indigenous peoples in Guyana is the Amerindian Act of 2006, and Amerindian communities have traditional privileges to mine, along with the right to veto any small or medium-scale mining activity on their titled land. However, they do not have the right to veto any large-scale mining operations if the government and regulatory processes approve that project in the national interest.

Institutional environment

Guyana has a large number of climate change and sectoral policies that aim to promote sustainable development. The Low Carbon Development Strategy (LCDS) was succeeded by the Green State Development Strategy (GSDS) as the main framework to guide Guyana's development. REDD+ is thereby seen as synonymous with LCDS/GSDS, although this integration between LCDS and REDD+ has made REDD+ performance less clear. Through LCDS, Guyana has raised funding to invest in the three activities which constitute the 'plus' of REDD+: the conservation of forest carbon stocks; sustainable management of forests; and the enhancement of forest carbon stocks. The construction of a hydro-powered plant that would reduce the country's heavy dependence on fossil fuels was one of the key features of the strategy. Guyana has signed many international commitments, including the Paris Agreement and the Nationally Determined Contributions, along with the Forest Carbon Partnership Facility (FCPF), and European Union Forest Law Enforcement, Governance and Trade-Voluntary Partnership Agreement (EU FLEGT 2018b). The country is also committed to reduced impact logging, expanding the generation of clean and renewable energy, degradation monitoring and Protected Area management. The Protected Areas Commission, working with partners, has begun to explore the identification of an additional 2 million ha of Guyana's land mass that will be added to the Protected Areas of Guyana. This will take total Protected Areas to 17% of Guyana's land mass. The National Forest Plan and Policy in 2018, as well as the Code of Practice for Timber Harvesting 2018, also embed REDD+ into the existing policy framework.

However, slow progress in addressing land titling issues and recognition of indigenous tenure rights, weak governance undermined by corruption, rent-seeking behavior, and unclear tenure are key government challenges that impede effective implementation of both REDD+ and other forestry policies in Guyana.

Political economy of deforestation and forest degradation

Drivers of deforestation and forest degradation in Guyana derive mainly from the mining sector, which plays a significant role in national Gross Domestic Product (GDP). Harmonizing environmental and economic development goals is challenging and requires strong political commitment to remove economic incentives that can accelerate drivers of deforestation and degradation.

REDD+ progress in Guyana

Norway agreed to support Guyana to maintain its low levels of deforestation, providing up to USD 250 million over a five-year period ending in 2015 to implement the LCDS and REDD+. Funding for implementation of Guyana's REDD+ program relies on the Guyana REDD+ Investment Fund (GRIF), which is supported through Norway's investment as well as the national budget. GRIF was set up to manage the payments provided by its contributors and to arrange the flow of funds. This REDD+ funding has allowed for regular monitoring, reporting and verification of forest area changes. With financial support, Guyana Forestry Commission (GFC) has developed a new monitoring, reporting and verification (MRV) system that has allowed for comprehensive, consistent, transparent and verifiable assessments and reporting of forest area change. Funding has also created incentives and changes in the legal framework, such as strengthening law enforcement in forestry and mining sectors. The national REDD+ strategy is currently being drafted, but key elements such as a transparent and equitable benefit sharing mechanism, an inclusive decision-making process and comprehensive safeguards system were highlighted by key informants interviewed as being in need of revision based on consultations with stakeholders in Guyana. At the same time, national commitment towards REDD+ can only be enhanced through clear performance criteria mutually agreed between donors and government, and payments being made with low transactional costs, on the basis of promoting national ownership over its fund.

Implications of the country's current REDD+ design for effectiveness, efficiency and equity

Guyana has demonstrated REDD+ progress, particularly in terms of its MRV system. However, most of this progress was made early on and has since slowed, mainly due to delays in financing caused by the administrative hurdles of channeling funds earned from the Guyana–Norway Agreement. Increased mining activities and a big oil find have diverted attention away from forest protection and REDD+, with minimal actual spending on REDD+. Yet it is too early to see any impact on the rates of deforestation, particularly when Guyana's economy still largely depends on extractive resources, with mining remaining the main driver of deforestation.

One significant aspect of REDD+ in Guyana is the opt-in mechanism, presented as an opportunity for indigenous communities to voluntarily participate in REDD+. Unfortunately, engagement with indigenous communities is perceived by those indigenous communities interviewed as inadequate. Proper processes for Free Prior Informed Consent (FPIC) have not been fully implemented; rather, some communities were only passively informed and involved without proper consultation. However, more REDD+ funding has been allocated for this activity aimed at promoting behaviour change. While indigenous rights need to be strengthened, overlapping and conflicting land uses, especially between forestry and mining, need to be resolved.

Acronyms

CIFOR	Center for International Forestry Research
CMRV	Community Monitoring, Reporting and Verification
CO_2	Carbon dioxide
EPA	Environmental Protection Agency of Guyana
EU	European Union
EU-FLEGT	European Union Forest Law Enforcement, Governance and Trade
EVN	Economic Value to the Nation
FAO	Food and Agriculture Organisation of the United Nations
FCMS	Forest Carbon Monitoring System
FCPF	Forest Carbon Partnership Facility
FPIC	Free, Prior and Informed Consent
FRA	Forest Resources Assessment
GCS-REDD+	Global Comparative Study on REDD+
GDP	Gross Domestic Product
GFC	Guyana Forestry Commission
GGMC	Guyana Geology and Mines Commission
GLSC	Guyana Lands and Surveys Commission
GO-Invest	Guyana Office for Investment
GRIF	Guyana REDD+ Investment Fund
GSDS	Green State Development Strategy
INC	Initial National Communication
JCN	Joint Concept Note
LCDS	Low Carbon Development Strategy
LUC	Land use change
MoU	Memorandum of Understanding
MRV	Monitoring, reporting and verification
MRVS	Monitoring, Reporting and Verification System
MSSC	Multi-Stakeholder Steering Committee
NCS	National Competitiveness Strategy
NDC	Nationally Determined Contributions
NGO	Non-governmental organization
NORAD	Norwegian Agency for Development Cooperation
REDD	Reducing Emissions from Deforestation and forest Degradation
REDD+	Reducing Emissions from Deforestation and forest Degradation, and enhancing forest carbon stocks in developing countries
SC	Shifting cultivation
SFP	State Forest Permissions
SFEP	State Forest Exploratory Permit
TSA	Timber Sales Agreement
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
VPA	Voluntary Partnership Agreement
WCL	Wood Cutting Lease

1 Introduction

Many questions remain on how to effectively, efficiently and equitably formulate and implement REDD+ for countries participating in REDD+ programs. Drivers of deforestation and forest degradation are often highly complex, and can form part of dense networks of economic and political interests. Reducing emissions by limiting forest degradation and deforestation can be seen as a controversial approach in the context of national development paradigms and existing policy frameworks or objectives. What are the political implications of a REDD+ mechanism? How can it be implemented successfully on the ground? Understanding the complex relationships between drivers, agents and institutions within the national context is vital to ensuring effective implementation of REDD+.

The Global Comparative Study on REDD+ (GCS REDD+), together with its country partners, is compiling profiles of 17 countries to better understand the socio-economic context in which REDD+ policies and processes emerge. Guyana is one of these 17 countries studied.

Guyana is a small country with about 87% of its area covered with forest (GFC 2018b) that forms an important part of the Amazon biome and one of the four largest remaining standing tropical rainforests in the world. Guyana's population of approximately 779,004 people (World Bank 2019) is low density (4 people per km), with its inhabitants living primarily along the coast. Guyana is a lower middle-income country, ranking medium in terms of human development (UNDP 2018). The forestland is home to the country's indigenous peoples, who comprise over 9% of the population and hold ownership rights to more than 14% of the land mass.

Since 2006, Guyana has actively engaged in REDD+ and in 2009 signed a Memorandum of Understanding with the Kingdom of Norway for support to implement its Low Carbon Development Strategy (LCDS). This is a national plan to reorient Guyana's economy and move towards more sustainable extractive industries and forest management. This bilateral agreement established a framework for performance-related finance of up to USD 250 million from 2010 to 2015 for implementation of the LCDS. Three main pillars of the LCDS, linked to its REDD+ agenda, include preventing deforestation, endorsing low carbon development and adapting to climate change (Bellfield et al. 2015). Among the GCS-REDD+ case studies, Guyana is one of the most advanced REDD+ countries, alongside Brazil (Korhonen-Kurki et al. 2019), and the Norway–Guyana bilateral agreement is the world's second largest national-level REDD+ scheme (Bade 2013).

This Guyana REDD+ country profile provides contextual analysis on conditions affecting the REDD+ policy environment in the country. It is based on reviews of existing literature, national and international data, reviews of legal documents and selected expert interviews. This Guyana country profile examines and discusses five areas: (1) drivers of deforestation; (2) the institutional environment; (3) the political economy of deforestation and forest degradation; (4) the political environment of REDD+, including actors, events and processes; and (5) implications of the country's current REDD+ design for effectiveness, efficiency and equity.

The aim of this country profile is to inform decision makers, practitioners and donors of the opportunities and challenges regarding implementing a REDD+ mechanism, and to support evidence-based REDD+ decision-making processes.

2 Methods

This country profile follows the Global Comparative Study on REDD+ guidelines (Brockhaus et al. 2012) for assessing REDD+ at the country level. Both secondary and primary data collection were conducted as part of research and information gathering.

Secondary data collection included reviews of government reports and policies, donor and NGO reports, and media reports. Primary data collection involved interviews with seven experts on sustainable forest management and indigenous rights. Three workshops were also held with key stakeholders during June and December 2017, and in April 2019, to obtain stakeholder feedback and verify research findings. A total of 97 people participated in the workshops, including representatives of forestry, mining, lands and protected areas commissions, other government agencies, the private sector, non-governmental organizations, international environmental institutions, donor agencies and academia.

3 Drivers of deforestation and degradation

This chapter provides an overview of Guyana's forest cover, including forest types and area changes over time. It examines the cause and impact of these changes, and looks at the actions being undertaken to counteract the negative results of these changes on the country's forest resources.

3.1 Historical overview of forest cover change

Guyana owns 0.4% of global forest cover, and forest covers 87.5% of country total area (Laing 2014; GFC 2018b). The country also had the lowest deforestation rate in the world during 2000–2005 (FAO 2005). Before 2010, different reports show differing figures on forest cover in Guyana, mainly due to the lack of systematic data collection. For example, while FAO reported 15.2 million ha of forest cover in 2010, the Guyana Forestry Commission (GFC) reported the forested area being up to 18.398 million ha (± 0.4130 million ha) (FAO 2015). Guyana has also moved from using the broad definition of forest provided by Forest Resources Assessment (FRA) 2005 and 2010 to an adoption of the Marrakech Accords definition (UNFCCC 2001) as reflected in FAO Global Forest Resources Assessment (FAO 2015), resulting in revised updated reporting (Table 1). The reclassification section (Section 1.3.3) of the FRA 2015 report indicates Guyana's adoption of the Marrakech Accords definition of forests (FAO 2014).

The definition for land classified as forest, according to the Marrakech Accords, identifies a "minimum area of land of 0.05–1.0 ha, with tree crown cover (or equivalent stocking level) of more than 10–30%, and trees with the potential to reach a minimum height of 2–5 meters at maturity *in situ*." Guyana has elected to classify land as forest if it meets the following criteria: "Tree cover of a minimum of 30%, at a minimum height of 5 m, over a minimum area of 1 ha." This definition is used by the Government of Guyana (GoG) as the basis for classification of national land uses, which have been placed into six broad categories in accordance with the reporting guidelines of the Intergovernmental Panel on Climate Change (IPCC) (Table 2).

Table 1. Forest definitions according to the FAO and Marrakech Accords

	FAO Global Forest Resources Assessment	Marrakech Accords
Forest definition	Land spanning more than 0.5 ha with trees higher than 5 m and a canopy cover of more than 10%, or trees able to reach these thresholds *in situ* (FAO 2012).	A minimum area of land of 0.05–1.0 ha, with tree crown cover (or equivalent stocking level) of more than 10–30%, and trees with the potential to reach a minimum height of 2–5 meters at maturity *in situ*.
Forest area	18.398 million ha (± 0.4130 million ha) in 2009 in Guyana with 97.1% accuracy verified by University of Durham (GFC 2018b).	18.39 million ha with a 91% indicative accuracy (GFC 2018b).

Table 2. Categories of land use in Guyana

Class	Land use category	FAO land use type	Geography/key species	Guyana's approach
Forest	Forest land	Mixed forest	In lowland areas (10–400 m) with high rainfall from the north-western parts of the country across to the south, bordering savannah areas with high abundances of endemic and commercial timber species, including Greenheart (*Chlorocardium rodiei*) and Purpleheart (*Peltogyne venosa*).	Grouped as forest for interim measure reporting, with Guyana's definition of forest applied for quantification within categories.
		Wallaba/ Dakama/Muri shrub	Areas prone to fire or flooding, dominated by *Eperua spp.* while *Swartzia bannia* and *Licania icanna* predominate the Muri shrubland which results from a degraded Dakama forest.	
		Forest swamp/marsh forest	Permanently flooded areas along the coast and along rivers (species include *Symphonia globulifera, Tabebuia insignis* and *Pentaclethra macroloba*), and further inland where there is less flooding.	
		Montane forest	In the uplands (500–2,000 m), occurring in Kanuku and Pakaraima mountains in the south, and in the upper Mazaruni valley.	
		Mangrove	Along the coast and coastal riverbanks populated mainly by *Avicennia germinans, Rhizophora mangle* and *Laguncularia racemosa* species.	
		Savannah >30% cover		
		Plantations		
Non-forest	Grassland	Savannah <30% cover Grassland		Grouped as non- forest for interim measure reporting, with Guyana's definition of forest applied for quantification within categories.
	Cropland	Cropland		
		Shifting agriculture		
	Wetland	Wetland open water		
		Herbaceous wetland		
	Settlements	Settlements		
	Other land	Other land		

Source: GFC and Pöyry 2011

The simplified national vegetation map (Figure 1) also gives an overview on the distribution of these existing land uses and demonstrates that tropical high forests in 2017 comprised over 98% of total forest area, or approximately 87.5% of total land area.

Guyana also uses four main tenure classes namely: State Forest Areas, State Lands, Titled Amerindian Lands and Protected Areas, based on which party has the right to administer and use them by law. However, Table 3 and Table 4 illustrate that most land and forest areas are being managed by the state, with indigenous peoples managing just 14% of total land area in Guyana.

In 1990, Guyana's forest cover was estimated to be 18.47 million ha, as assessed using satellite imagery and aerial photographs. By 2009, a Low Carbon Development Strategy was launched, and a landmark agreement was signed with the Kingdom of Norway, which required a series of forest-based interim measures to be in place. The year 2009 was chosen by the Guyanese government as the benchmark for reporting annual deforestation rates, while the period 1990–2009 was designated the benchmark reporting period for comparing forest cover changes. Guyana's Monitoring, Reporting and Verification System (MRVS) Interim Measures Reports detail the extent of deforestation and degradation changes every year and, as reflected in the Year 7 report, show progressive steps by the GFC to maintain and improve accuracy through advances in technology use and capability.

Medium-resolution satellite images and national forest definitions were used to calculate the forest area, which was then 18.3947 (±0.430) million ha, of which 15.5 million ha were administered by the state (GFC and Pöyry 2011). This estimation was greater than previous forest estimates, such as the FAO's 2010 Global Forest Resources Assessment (FRA) which reported 15.2 million ha as being forested. Indeed, Guyana's 2010 submission to FAO FRA classified 3.58 million ha as other wooded lands, and an additional 0.9 million ha as other lands. Since 2010, changes in forest cover and land uses over the national landscape are reported annually and are assessed against the benchmark area.

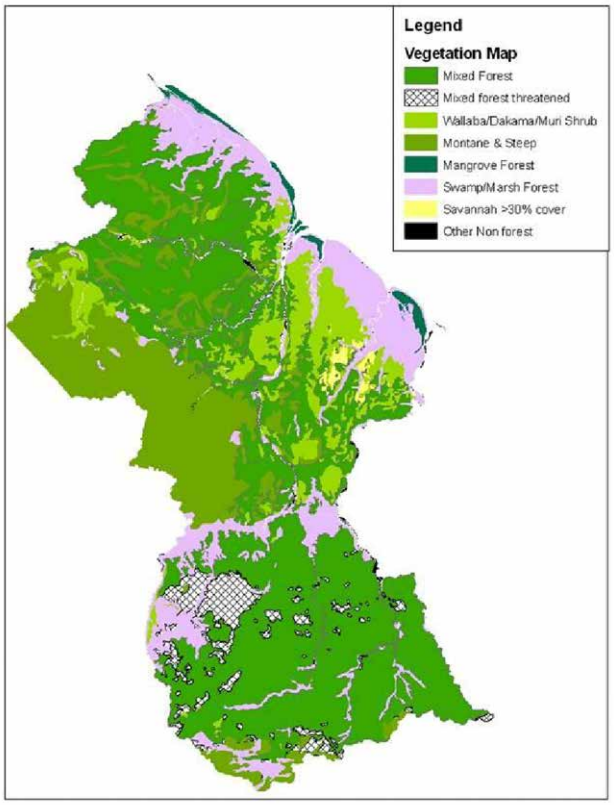

Figure 1. Simplified national vegetation map 1:1,000,000

Source: GFC 2017a

Table 3. Land use area under different tenure arrangements

Tenure class	Description	Area (total land mass)
State Forest Area	Administered by the Guyana Forestry Commission under the Forest Act of the Laws of Guyana.	59%
State Lands	All lands exclusive of the State Forest Area and titled Amerindian Lands.	20%
Protected Areas	Areas designated for protection and conservation (Kaieteur National Park, Shell Beach, Kanuku Mountains and Iwokrama).	5%
Amerindian Titled Lands	Lands for which indigenous peoples have user and tenure rights under the Amerindian Act.	16%

Source: GFC 2018b

Table 4. National land uses (2017)

2017 land classes	Forest	Non-forest					
		Grassland	Cropland	Settlements	Wetlands	Other land	Total
	(Area '000 ha)						
State Forest Area	10,973	1,238	132	35	150	37	12,566
Titled Amerindian Lands*	2,864	323	35	9	39	10	3,280
State Lands	3,609	407	44	11	49	12	4,132
Protected Areas*	997	112	12	3	14	3	1,142
Total area	18,443	2,080	223	58	253	62	21,119

* Including newly titled lands

Source: GFC 2018b

Table 5. Process of establishing forest areas

Period	Technology/development	Notes
1990	Landsat images at 30 m – no non-forest areas (and existing infrastructure)	Reporting on deforestation only
1990–2009	Temporal series of satellite data assessed forest to non-forest LUC	Reporting on deforestation only
2010 Interim Reference Measurement (IRM) Report	Total forest area above definition: 18.39 million ha	Estimated benchmark period
2013 and 2014	RapidEye national coverage at 5 m – improved historical data	Reporting on forest degradation added
2014 (Year 5)	Revised to 18.48 million ha – 7,069 ha (gain) compared with Year 4 (18,475,478 ha)	Reporting on deforestation and forest degradation
2015 and 2016 (Year 6)	Planet Scope technology at 3 m added. Total forest area remaining 18,452,160 ha	Reporting on deforestation and forest degradation
2017 (Year 7)	Sentinel at 10 m, Planet Scope, aerial photographs, total forest area remaining 18,442,960 ha	Reporting on deforestation and forest degradation

Source: GFC 2018b

The FAO's FRA of 2015 reported an estimated 74,917 ha[1] changed from forest to non-forest areas during the benchmark period (1990–2009). These were determined based on wall-to-wall assessments using Landsat multispectral scanners and Landsat images at 80 m and 30 m respectively (FAO 2015), backed up by data from other sources including ground truthing. Successive assessments have benefitted from more specialized technology (Table 5).

Although the assessment periods were not always confined to calendar years or 12-month periods, changes in forest area over the period assessed were evaluated in comparison to the previous one, and reported as Years 1 to 6 (Table 6).

The forest area change data garnered over seven years (2010–2017), along with the estimated forest loss during almost 20 years of the benchmark period, validate Guyana as a country with historically low annual deforestation rates, estimated way below one-tenth of one percentage (0.1%) point. Although 2012 was found to have the 'highest' level of annual deforestation, estimated at 18,452 ha or 0.079% as compared with all the years assessed, this was not a significant increase in the trend.

A graphic representation of the areas that have been deforested during the benchmark period (historical)

1 This was calculated as total forest area in 1990, minus 2009's forested area.

Table 6. Trends in forest cover change in Guyana (1990–2017)

Reporting period	Year	Years	Satellite image resolution	Forest area ('000 ha)	Annualized change	(%)
Initial forest area (1990)	1990		30 m	18,473.39		
Benchmark (Sept 2009)	2009	19.75	30 m	18,398.48	74.92	0.021
Year 1 (Sept 2010)	2010	1	30 m	18,388.19	10.28	0.056
Year 2	2011	1.25	30 m & 5 m	18,378.30	9.88	0.054
Year 3	2012	1	5 m	18,487.88	14.65	0.079
Year 4	2013	1	5 m	18,475.14	12.73	0.068
Year 5	2014	1	5 m	18,470.57	11.98	0.065
Year 6	2015–16	2	10 m & 30 m	18,452.16	9.20	0.050
Year 7	2017	1	10 m & 30 m	18,442.96	8.85	0.048

Source: GFC 2017

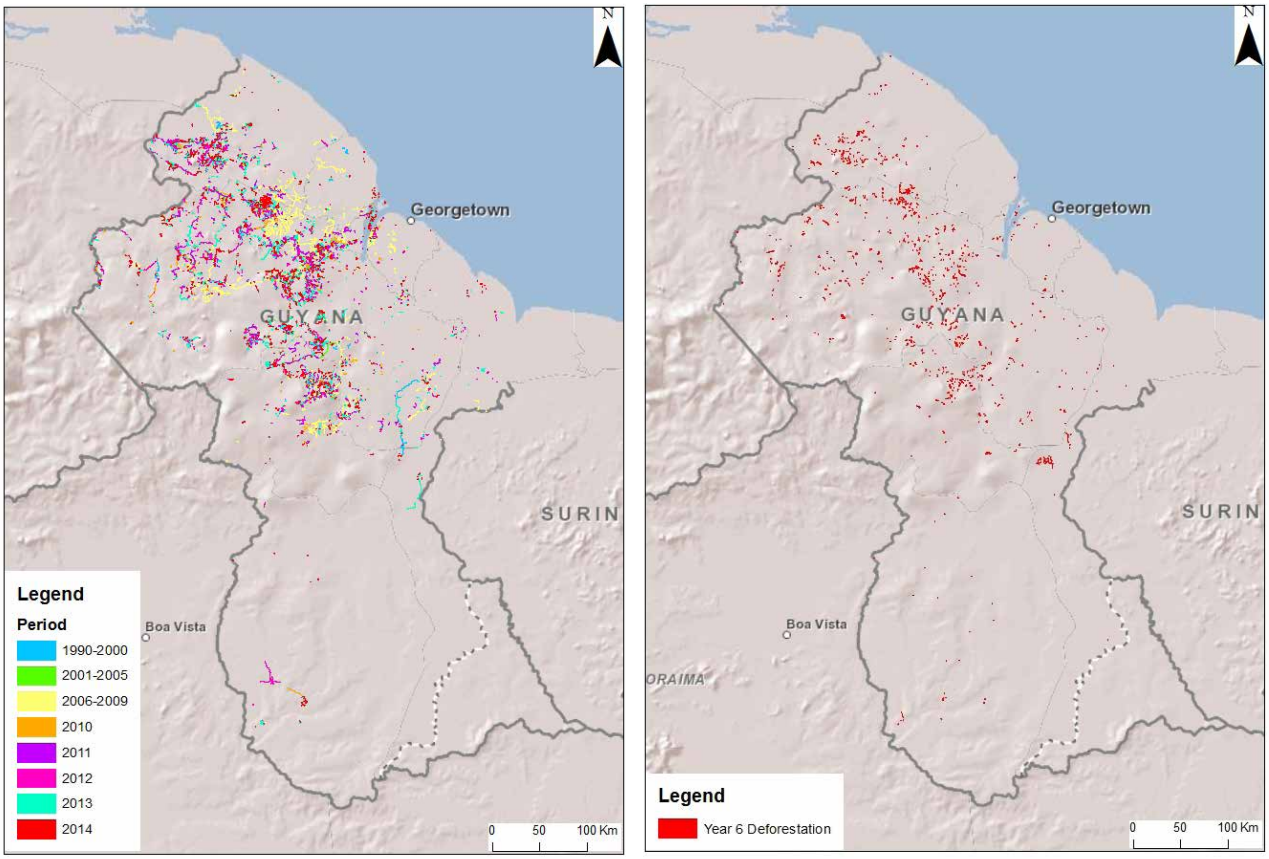

Figure 2. Historical (left) and Year 6 (right) forest changes

Source: GFC 2017a

and by the end of 2016 is presented in Figure 2, which illustrates forest changes in the sixth year of Guyana's MRVS assessment. The areas where these changes have occurred were noted to be close to road and river networks, in the mixed forest areas (Figure 3) and mineral-rich zones of the country.

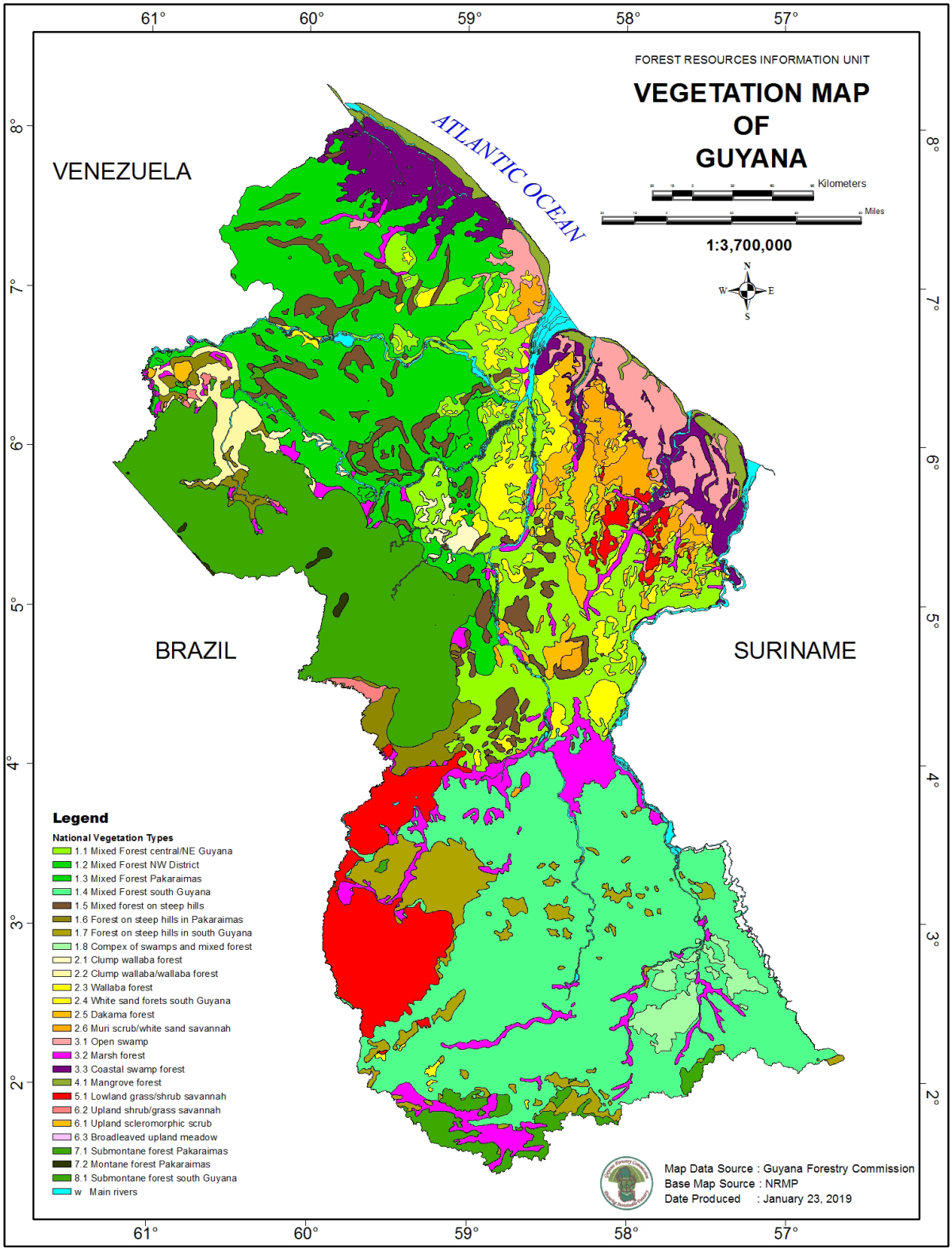

Figure 3. Detailed vegetation map of Guyana (2001 data)

Source: GLSC 2013

Table 7. Deforestation rate in Guyana, produced by different authors

Period/years	Deforestation rate/year	Authors
Unknown	0–0.5%	Cedergren 2009
2012	< 0.08%	Bade 2013
2005	0.1–0.3%	FAO 2005
1950–2009	0.4%, produces 46.9 $MtCO_2e$ annually	Alder and Kuijk 2009
1962–2001	Total deforestation and degradation of 24,965 km^2, 16% of the total forested area	Alder and Kuijk 2009
1990–2009	0.03% as compared with a global average deforestation rate estimated at 0.52%	GFC and Pöyry 2011
2000–2010	0.03%	GFC and Pöyry 2011
2009–2010	0.056%	GFC and Pöyry 2011
2010–2011	0.054%	GFC and Indufor 2012
2011–2012	0.08%	GFC and Indufor 2012

Guyana is a country with high forest cover and low deforestation, with forest cover of approximately 87.5% or 18.5 million ha (GFC 2018b). There are different figures available on deforestation rates in Guyana produced by different authors for different periods, which indicates inconsistency among available data sources (Table 7). GFC has increased the verifiable accuracy of deforestation data for Guyana through methodological improvements. Despite these differences, there is a common conclusion among stakeholders interviewed and participating in the national consultation workshops that Guyana has a low rate of deforestation, even though this deforestation has slightly increased over time.

Although Guyana's reporting is more advanced compared with other countries, as it also assesses forest degradation, some scholars have expressed reservation on the reports and data on deforestation in Guyana, stating that they should be used cautiously because of technical issues related to satellite imaging and extensive cloud cover, along with differences in methodologies. Historically, lack of data has been an issue for measuring forest cover and deforestation (due to more than half of Guyana's forests being inaccessible by roads and rivers and therefore, ground data collection becomes challenging); however, annual deforestation estimates are extremely low (Cedergren 2009).

Bellfield et al. (2015) suggested that the MRVS may be overstating the rate of deforestation, due to a small-scale 'ground truthing' exercise (though that exercise was not nationally representative), while Laing (2018) contended that deforestation data was imprecise and annual comparisons, in particular, should not be over interpreted. However, interviews with the GFC and literature reviews indicate that Guyana has implemented an independent accuracy assessment process to accompany the national reporting system, in order to mitigate against these risks. Further, the system is built upon the principle of conservativeness, whereby decreases in emissions will not be overstated.[2] According to GFC (2017), independent third-party verification has verified interim indicators for REDD+ performance in Guyana related to emissions resulting from i) forest management (i.e. selective logging) activities in natural or semi-natural forests, and ii) illegal logging activities (GFA Consulting Group 2014).

In the framework of the UNFCCC discussions on REDD+ countries, the development of appropriate methods for measuring changes in forest carbon stocks at the national level with

2 Terms of Reference for Developing Capacities for a national Monitoring, Reporting and Verification System to support REDD+ participation of Guyana Background, Capacity Assessment and Roadmap, pg 33.

an acceptable degree of certainty is one major requirement. Berger et al. (2009) outlined that one possible approach was to evaluate the map's precision, and modify the area estimates accordingly. The accuracy assessment process used by Guyana follows recognized design considerations with three distinctive and integral phases: "response design, sampling design, and analysis and estimation" (Stehman and Czaplewski 1998). The change reference estimate dataset for the accuracy assessment conducted by an independent team (University of Durham), uses an independent and separate dataset from that used in national mapping, and is captured using GeoVantage's (Aeroptic) aerial imaging camera system mounted externally to a light aircraft. The camera uses a multi-spectral sensor, capturing red, green, blue and near infrared spectral bands, while the spatial resolution of the imagery depends on the altitude at which the data is captured. Operating at altitudes ranging from 609 to 1,524 m, the resultant imagery ranged from 25 to 60 cm pixel size, further validated by ground truthing. The process produces the main outcome of establishing error bars as shown in Figure 4.

The GFC stated that execution of this MRVS process had revealed that the nationally reported results for forest cover, forest change and forest degradation were closely similar to independent assessments done to ensure their accuracy.

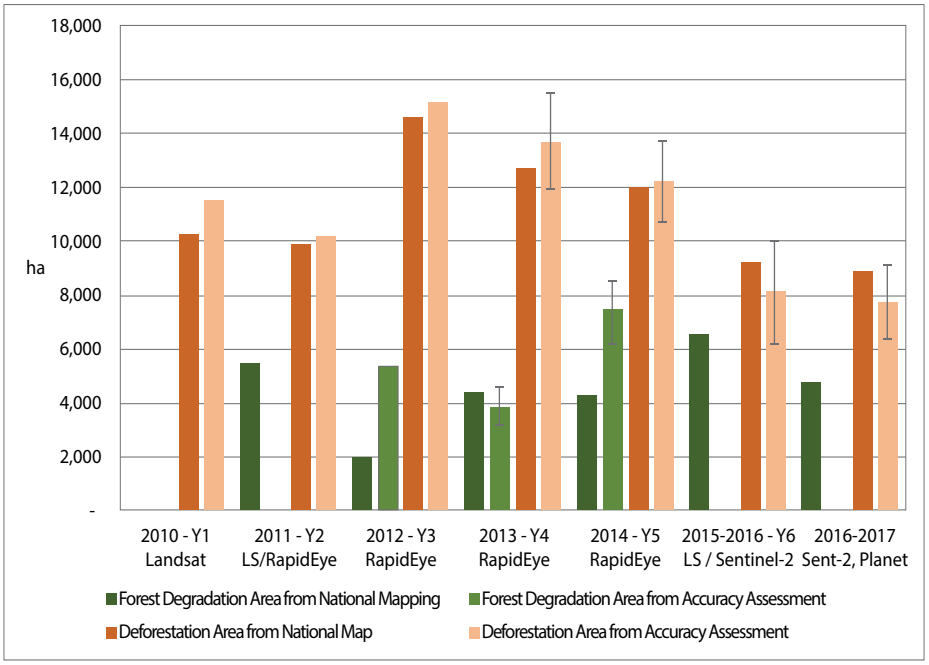

Figure 4. Accuracy assessment of forest degradation

Source: GFC 2018b

Table 8. Main drivers of deforestation and forest degradation in 2017

Drivers of deforestation	Annualized LUC (%)	Drivers of forest degradation	Annualized LUC (%)
Mining	84%	Mining sites and roads	81%
Fire	6%	Shifting cultivation	11%
Agriculture	5%	Permanent agriculture	2%
Forestry	3%	Others	6%
Infrastructure	2%		

Source: GFC 2018b

3.2 Main drivers of forest cover change

3.2.1 Direct drivers

Drivers of deforestation and forest degradation in Guyana are mining, road infrastructure, agricultural conversion and fire, timber extractions and associated industries (Bellfield et al. 2015). However, the major driver is mineral mining, in particular gold mining (Laing 2014),[3,4] accounting for 94% of deforestation in 2012 and 84% in 2017, while 81% of forest degradation in 2017 resulted from mining sites and associated roads.

The next section discusses in detail each driver of deforestation and degradation mentioned in Table 8.

Forestry

The GFC administers and manages the state forest through two types of forest concessions for harvesting under Guyana's regulations (Table 9). These concessions are elaborated in the 2018 Forest Sector Information Report (GFC 2018a) with the impact of institutional conditions on REDD+ discussed by Laing (2014).

In addition to these harvesting permits, there is the option of a State Forest Exploratory Permit (SFEP) that is valid for three years, during which the environmental permitting process and other requirements must be completed. If all of the requirements, including the conduct and approval of an environmental and social impact assessment, and the submission of a business plan, are successfully completed at the end of the three-year period, the SFEP can be upgraded to a State Forest Authorization for large concessions, formerly called a Timber Sales Agreement (TSA) or Wood Cutting Lease (WCL) as applicable. In 2017, six of these permits (SFEPs) were given, covering 7.3% of state forest (GFC 2017a).

The GFC stated in interviews with the authors that forest management concessions, based on MRVS results, do not lead to deforestation; the impact and scale of timber harvesting was low. The commission's enforcement of sustainable forest management practices, including reduced impact logging, is considered contributory to this position. However, forest degradation impacts are detected and reported by the GFC as a REDD+ interim indicator with emission impacts.

Table 9. Types of forest concessions in Guyana

Concessions types	Target groups	Number of groups
State Forest Authorizations (Small Concessions) are granted on a bi-annual basis (with possibility of renewal) for small areas of state forest less than 8,097 ha. Community Forest Management Agreements are issued under this category.	Small operators, communities and cooperatives operating, primarily chainsaw logging	410 SFPs covering 13.5% of state forest
State Forest Authorizations (Large Concessions) are granted for between 25 and 40 years for areas greater than 24,291 ha. For first time issuance of large concessions, a precursor state is the State Forest Exploratory Permit.	Large commercial interests, both Guyanese (e.g. Toolsie Persaud Ltd) and foreign owned (e.g. Vaitarna Holdings Private Inc (VHPI)) *This category has seen a reduction of 2 million ha over the last 3 years resulting from non-renewals and revocations for non-compliance.*	TSAs cover the majority of state forest exploratory permits granted for production, with 15 concessions covering almost 8% of the total State Forest Estate area

3 Large-scale mining operations are required by law to reclaim and rehabilitate areas post-mining, inclusive of revegetation.

4 Forest degradation for 2015–2016 was not disaggregated by driver.

Table 10. Annual deforestation and degradation by driver (1990–2016), in hectares

Driver	Year 1 2009–10	Year 2 2010–11		Year 3 2012		Year 4 2013		Year 5 2014		Year 6 2015–16
	Deforested	Deforested	Degraded	Deforested	Degraded	Deforested	Degraded	Deforested	Degraded	Deforested
Forestry	270	211	147	229	113	316	85	199	62	285
Agriculture (permanent)	3	33	-	102	-	69	-	112	-	120
Mining	8,582	8,788	5,038	12,179	1,499	10,202	2,616	9,326	3,391	5,824
Infrastructure	24	322	5	44	13	283	108	113	63	188
Fire (deforestation)	32	5	4	145	125	22	284	60	173	1,217
Settlements						11	20	28	-	6
Shifting agriculture							287		39	-
Degradation (Year 2) converted to de-forestation				148		62		22		
Degradation (Year 3) converted to de-forestation						194		93		
Degradation (Year 4) converted to de-forestation								125		
Amaila Falls Development (Infrastructure roads)		255				64	20	49	20	-
Area Deforested	8,910	9,362	5,194	12,848	1,749	11,161	3,400	10,127	3,748	7,641
Total Forested SFA Area (ha)	12,417,718	12,341,893		12,341,893		12,329,045		12,249,224		12,239,896
Total Forested SFA Remaining (ha)	12,408,807	12,332,530		12,329,045		12,317,884		12,239,097		12,215,615
Period Deforestation rate (%)	0.07%	0.08%		0.10%		0.09%		0.08%		0.05%

Source: GFC 2017a

Table 11. Annual rate of forest change by period and driver (1990–2017)

Reference period	Change period	Change period	Annual rate of change by driver						Annual rate of change (ha)
			Forestry	Agriculture	Mining	Infra-structure	Fire	Settle-ments	
		(Years)	Annual area (ha)						
Historic	1990–2000	10	609	203	1,084	59	171	-	2,127
	2001–2005	5	1,684	570	4,288	261	47	-	6,850
	2006–2009	4.8	1,007	378	2,658	41	-	-	4,084
	2009–2010	1	294	513	9,384	64	32	-	10,287
MRV Phase I	2010–2011	1.25	186	41	7,340	298	46	-	7,912
	2012	1	240	440	13,664	127	184	-	14,655
	2013	1	330	424	11,518	342	96	23	12,733
	2014	1	204	817	10,191	141	259	71	11,975
MRV Phase II	2015–2016	2	313	379	6,782	217	1,509	8	9,208
	2017	1	227	477	7,442	195	502	7	8,851

Source: GFC 2018b

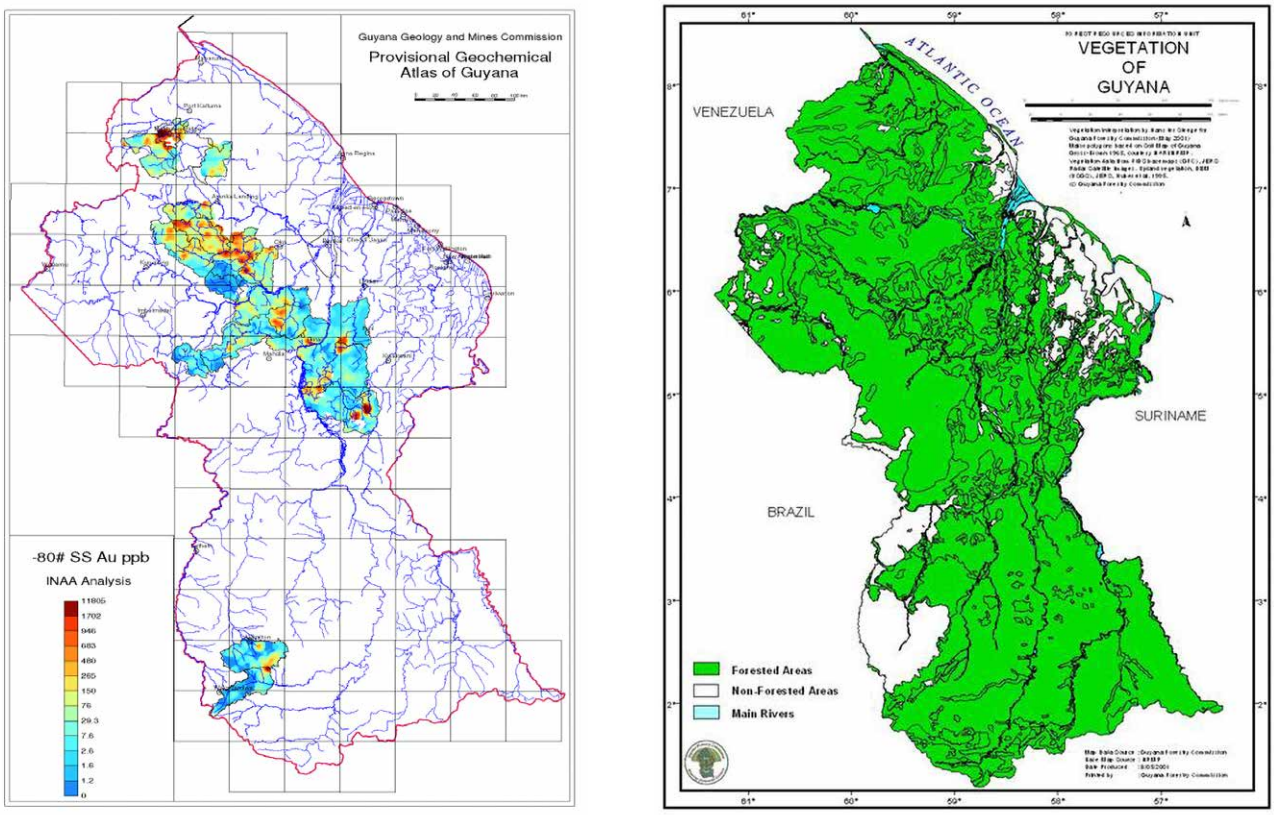

Figure 5. Comparison of mining and forest areas – geochemical map of Guyana's gold (left) and map showing vegetation of Guyana (right)

Source: Guyana Geology and Mines Commission 2019

Mining

Mining accounted for more than 93% of deforestation in Guyana in 2015 (Bellfield et al. 2015), while mining sites and associated roads resulted in 81% forest degradation in 2017 (GFC 2018b). The global price for gold reached its highest in 2012 and corresponded with the highest total deforestation recorded for a single year. The highest rate was recorded during 2011–2012, with 12,179 ha deforested by mining activity, and an additional 1,499 ha degraded by mining sites and associated roads (GFC 2017a; see also Table 10 and Table 11).

The forestry sector conducts selective logging practices (Trevin and Nasi 2009; Brown et el 2014) as required by the Code of Practice for Forest Operations for State Forest Authorizations (GFC 2018c). The main geographical areas where deforestation and degradation are pronounced as a result of gold mining, and where the greatest threats for increased land use changes (LUCs) are anticipated, are within State Forest Area (Figure 5).

Guyana's mining areas overlap forest areas, with conflicting uses by miners and loggers respectively. Within the administrative and regulatory spheres, the Guyana Geology and Mines Commission (GGMC) is geared to "unlock the mineral and petroleum wealth of Guyana" (GGMC n.d.) while the GFC is mandated to ensure sustainable forestry (GFC n.d.). Their respective legislative instruments, although complementary in some areas, have superseding rights to mining (below ground) over logging (above ground). This scenario remains a problem to the regulatory agencies with conflicting responsibility, as well as for multiple resource users. Sustained calls and efforts are being made to resolve issues and improve collaboration between loggers and miners in particular. The LCDS, introduced in 2009, did not immediately alter the regulatory framework for mining in Guyana. However, due to the nature of mining, and being the largest driver of deforestation in the country, the LCDS did include explicit mention of reform for the mining industry (Office of the President 2010; Laing 2015).

Mining areas and their impacts (and threats) also affect some indigenous communities. Community representatives are active in voicing concerns and taking legal action where necessary to protect their lands, their people and environments from the adverse effects of mining, which include pollution of waterways and fish used by the communities, and incursions on their titled lands.[5] The Ministry of Indigenous Peoples Affairs (MOIPA) along with the GGMC and the Environmental Protection Agency (EPA) are the key government agencies addressing these issues. Communities benefit from the support of indigenous and environmental NGOs, along with their own representative groups. It is also recognized that some indigenous communities are involved in mining as a source of income.

Concessions for rights to mine on state-owned land are granted by the GGMC, while in order to mine on Amerindian Lands, permission is required from two-thirds of the community, in attendance at a general community meeting. However, large-scale mining operations must comply with environmental and other permitting processes before approval is granted by government. Environmental permits are issued by the EPA on approval of environmental and social impact assessments (ESIAs) that include environment management and closure plans, and stakeholder consultation among other requirements (see EIA Guidelines – Mining) (EPA 2000).

However, since 2014, there has been a marked decrease in mining-related deforestation in Guyana, dropping from 13,664 ha in 2012 to 7,442 ha in 2017 (GFC 2018b). This was attributed in part to the fall in price of gold, in addition to improvements in the management of mining permits, including re-examination of the operations of reconnaissance permits, and increased monitoring by mining officers.

Shifting cultivation and fire

Fires accounted for 47% of deforestation between 1990 and 2000, and 6% in 2017, but none of the deforestation in 2014 (GFC 2018b).

Measuring and monitoring of settlements and shifting cultivation as drivers of deforestation and forest degradation started in 2013, but the impact was very low (GFC 2017a). Shifting cultivation entails clearing forests for temporary cropping and then either abandoning the crop fields or

5 Many indigenous communities own rights to their land. Approximately 14% of Guyana's land mass is held by indigenous communities.

revisiting them after a period, with the latter being the common practice in Guyana in a rotational manner. Although forest clearings are often small, they can be detected using multi-temporal, co-registered optical high resolution imagery. Work on monitoring this activity will be undertaken using post-2010 imagery by GFC (Brown et al. 2014).

The annual measurements of forest cover change included in GFC's monitoring plan are expected to effectively detect the dynamics of shifting cultivation areas based on use of higher resolution imagery from 2012. In 2013, the Indufor/GFC team initiated a process for monitoring shifting cultivation using RapidEye remote sensing imagery. Shifting cultivation (SC) was divided into two classes: i) pioneer SC (new areas cleared from mature forests), and ii) rotational SC (existing land under SC). The areas of rotational SC could be identified in the imagery as mosaics of cleared land and fallow lands at different states of fallow. Pioneer SC is identified when new areas of forest are cleared from the surrounding forests. With RapidEye and the subsequent use of Sentinel imagery, the dynamics of the clearing and later abandonment could be tracked through time (Brown et al. 2014).

Estimating the emissions from SC activities requires collection of data such as: i) determination of the areas where rotational SC occurs and delineation of the polygons that capture the mosaic of the forest–fallow cycle; ii) stratification by practice (burn, fallow length, cultivation length, etc.); iii) development of a chrono sequence of sites that allows measurement of carbon stocks in forests of different ages to determine carbon removals by year and to estimate the long-term average carbon stock; and iv) identification of the areas of pioneer SC and overlaying with the forest carbon stratification map to assign the appropriate emission factor to the area. Use of this method made it possible to track deforestation (pioneer SC), clearing patterns, and periods of fallow or regrowth as indicators of shifting cultivation.

Results from the estimation of carbon stocks for a chrono sequence of sites enabled a model of carbon accumulation over time to be developed, so that net emissions from the shifting cultivation cycle could be estimated. Emission factors from such an analysis could then be estimated using the stock-difference method. Such a system was expected to be implemented post-2013 when improved data from remote sensing imagery became available and a time series to inform the needed chrono sequence of at least 10 years was available; at the time of writing of this report this was being collated.

Permanent agricultural conversion

Guyana's economy is heavily dependent on agricultural commodities (EPA 2000). Historically, land use was primarily agriculture based; fertile lands on the coast were converted first to sugar plantations during the colonial period, and then to rice farming and other crops (mainly by farm families) after slavery and indentureship ended. Due to expanded market integration and trade with neighboring countries, especially Brazil, the agricultural sector is currently under a lot of pressure (Bellfield et al. 2015).

Permanent agricultural development occurs primarily on the low-lying, fertile coast lands. However, the Ministry of Agriculture has been promoting expansion of large-scale agriculture into the mainly intermediate savannahs. This has not materialized in any significant way.

Infrastructure (primarily road building)

The majority of deforestation was observed in the State Forest Area along existing road infrastructure and navigable rivers (GFC 2015, 2018b). Between 1990 and 2016, deforestation was mainly related to road construction and other actions related to the Amaila Falls hydropower project (368 ha deforested, 40 ha degraded). Infrastructure expansion to support mining and timber harvesting accounted for 85% of deforestation in 2014 (GFC 2015), and 84% in 2017 (GFC 2018b). Forest degradation has occurred both through mining and forestry activity, with 16,000 ha degraded between 2010 and 2014 – predominantly through mining (GFC 2015) – while 81% of forest degradation in 2017 was driven by mining sites and associated road infrastructure (GFC 2018b).

3.2.2 Indirect drivers of deforestation and degradation

According to stakeholders interviewed and workshop participants, weak coordination among government agencies, unclear land tenure and an unclear benefit sharing mechanism are major indirect drivers for deforestation and degradation. Land tenure is controversial, particularly in mining areas where Amerindian communities have traditional privileges to mine, along with the right

to veto any small or medium-scale mining activity on their titled land. However, they do not have the right to veto any large-scale mining operations if the government and the regulatory process approve that project in the national interest. During the course of this study, the authors did not encounter any case of a community having such veto situations/concerns regarding a large mining operation on their titled land.

3.3 Mitigation potential, assessment of carbon stocks and emission factors

Guyana's national forest monitoring system – referred to within Guyana as the Monitoring, Reporting, and Verification System (MRVS) – comprises the Forest Area Assessment System and the Forest Carbon Monitoring System (FCMS). The combination of activity data and emission factors generated from the

Table 12. Total forest carbon stocks in Guyana's forest based on average area (2001–2012)

Forest carbon sampling strata		Area (ha)	Total C stock (million tC)
High potential for change	More accessible	3,526,665	843.3
HPfC	Less accessible	3,160,253	1,044.4
Total HPfC		6,686,917	1,887.7
Medium potential for change	More accessible	1,116,669	316.8
MPfC	Less accessible	4,389,557	1,245.3
Total MPfC		5,506,226	1,562.1
Low potential for change	More accessible	271,416	77.0
LPfC	Less accessible	5,963,066	1,691.7
Total LPfC		6,234,482	1,769.7
Total all strata		**18,427,626**	**5,218.5**

Source: GoG 2015

Table 13. Emission factors for deforestation by driver and stratum

Stratum	Driver	Emission factor (tCO_2. ha^{-1})
HPfC-MA	Forestry infrastructure	876.8
	Agriculture	876.8
	Mining (medium and large scale)	876.8
	Mining infrastructure	876.8
HPfC-LA	Forestry infrastructure	1,211.7
	Agriculture	1,211.7
	Mining (medium and large scale)	1,211.7
	Mining infrastructure	1,211.7
	Infrastructure	1,211.7
HPfC-MA and LA	Forestry infrastructure	1,040.2
	Agriculture	1,040.2
	Mining (medium and large scale)	1,040.2
	Mining infrastructure	1,040.2
	Infrastructure	1,040.2

Note: HPfC=High Potential for Change, MPfC=Medium Potential for Change, MA=more accessible, and LA=less accessible
Source: GoG 2015

Table 14. Total emissions by driver and stratum (2001–2012)

Stratum	Drivers	Emissions (tCO_2)				
		2001–2005	2006–2009	2009–2010	2010–2011	2012
HPfC-MA	Forestry infrastructure	1,040,393	1,789,136	102,446	159,533	174,944
	Agriculture	52,673	2,544,509	223,429	122,734	225,406
	Mining (medium and large)	4,886,758	7,463,631	3,196,144	3,786,894	5,841,871
	Mining infrastructure	104,939	1,164,796	327,167	557,770	417,305
	Infrastructure	562,565	229,482	2,677	112,980	21,622
MA TOTAL		6,647,334	13,191,553	3,851,862	4,739,911	6,681,147
HPfC-LA	Forestry infrastructure	10,807	217,696	1,951	36,162	172,650
	Agriculture	372,976	3,571,792	27,571	107,368	213,862
	Mining (medium and large)	896,601	4,783,832	2,710,508	4,245,280	5,480,825
	Mining infrastructure	9,948	624,098	289,783	995,844	858,106
	Infrastructure	63,346	55,345	-	246,802	858,106
LA TOTAL		1,353,678	9,252,763	3,029,814	5,631,457	6,763,752
HPfC TOTAL		8,001,012	22,444,316	6,881,676	10,371,368	13,444,900
MPfC-MA&LA	Forestry infrastructure	13,801	224,945	274	22,299	11,619
	Agriculture	35,451	637,942	24,441	12,523	16,544
	Mining (medium and large)	605,945	1,291,771	868,902	738,007	1,373,839
	Mining infrastructure	10,934	71,574	76,294	153,233	206,312
	Infrastructure	54,986	136,142	45,924	57,857	81,294
MPfC TOTAL		721,117	2,362,374	1,015,834	983,909	1,689,609
MPfC Annual		144,223	492,161	1,015,834	787,127	1,689,609
LPfC-MA&LA	Forestry infrastructure	363	67,411	2,019	7,116	0
	Agriculture	0	26,411	9,937	0	1,833
	Mining (medium and large)	153,756	466,575	212,490	233,596	224,443
	Mining infrastructure	7,639	14,121	3,365	14,420	3,670
	Infrastructure	54,380	3,035	0	4,940	42,279
LPfC TOTAL		216,138	577,553	227,810	260,072	272,275
LPfC Annual		43,228	120,324	227,810	208,058	272,275
ALL	Forestry infrastructure	1,065,370	2,229,189	106,689	225,110	359,214
	Agriculture	461,100	6,780,653	285,378	242,110	457,695
	Mining (medium and large)	6,543,060	14,005,809	6,988,043	9,003,776	12,920,979
	Mining infrastructure	133,460	1,874,589	696,608	1,721,257	1,485,393
	Infrastructure	735,277	424,004	40,602	422,579	183,504
TOTAL		8,938,267	25,384,244	8,125,320	11,615,348	15,406,784
ALL	Forestry infrastructure	213,074	574,797	106,689	225,110	359,214
	Agriculture	92,220	1,695,163	285,378	242,626	457,695
	Mining (medium and large)	1,308,612	3,501,452	6,988,043	9,003,776	12,920,979
	Mining infrastructure	26,692	468,647	696,608	1,721,257	1,485,393
	Infrastructure	147,055	106,001	48,602	422,579	183,504
ANNUAL TOTAL		**1,787,653**	**6,346,061**	**8,125,320**	**11,615,348**	**15,406,784**

Note: HPfC=High Potential for Change, MPfC=Medium Potential for Change, MA=more accessible, and LA=less accessible

Source: GoG 2015

MRVS for key categories is used to approximate total carbon dioxide (CO_2) emissions by source or driver under Guyana's REDD+ program.

In August 2017, the GFC announced that a National Forest Inventory would be conducted as a series of complementary actions to support the MRVS (GFC 2017a). A 100% forest inventory was proposed, anticipated to better inform forest concessionaires to enable better planning and management of forest operations. A sum of GYD 120 million was reported to have been set aside for the National Forest Inventory (Guyana Chronicle 2018a), which commenced in October 2018 and is expected to last 3–4 years.

Guyana's forest carbon stock assessment included a stratified two-stage list sampling design[6] with clustered plots. Using this approach, the country was divided into 10×10 km blocks (primary sampling units – PSUs). The PSUs within each stratum were selected using a stratified two-stage list sampling design for carbon measurement – referred to as Stage 1. Secondary sampling units (SSUs) designed as an L-shaped cluster of four sub-plots were established within each PSU and carbon measurements were obtained. Stage 2 of the stock assessment comprised the random selection of SSUs within the PSUs.

The total carbon (C) stock in Guyana's forests (aboveground and belowground biomass) was estimated based on the average area for each stratum (average for 2001–2012) and carbon stocks. The total C stock of Guyana forests was quantified as 5.22 billion tons of carbon (5.22 billion tC) (Table 12). Carbon stock in forests was found to be relatively uniformly distributed among the three Potential for future Change (PfC) strata. The strata give rise to ecological considerations that affect how much carbon is contained within a given area of land, as well as human pressure considerations, related to how the land is being used and how it could be used in the future (accessibility).

Activity data and emission factors for deforestation were combined to provide estimates of the historical emissions for the period 2001–2012 (Table 13 and 14). Total emissions from deforestation during 2001–2012 were 69.47 million tCO_2. The average annual CO_2 emissions from deforestation over the whole period were 5.79 m $tCO_2\ yr^{-1}$. About 88% of the total emissions were from deforestation in the High Potential for future Change (HPfC) stratum, with 10% occurring in the Medium Potential for Change (MPfC) and about 2% in the Low Potential for Change (LPfC) strata. Emissions from medium and large-scale mining and mining infrastructure accounted for 79.7% of total emissions, followed by agriculture (11.8%), forestry infrastructure (5.8%), and infrastructure (2.6%).

Guyana's forest reference emission level (FREL) was premised on emissions from deforestation and forest degradation and calculated as the combined average of the national (0.049%) and global (0.435%) reference emissions, 0.242%; and the total forest carbon stock over a 12-year (2001–2012) period estimated at 19,134,623,287 tCO_2.[7] As a result, the national proposal for reference levels to the UNFCCC (GFC 2015) estimated Guyana's carbon emissions at 46,301,251 tons of carbon dioxide equivalents per year (tCO_2eq/yr). The UNFCCC's report on its technical assessment of the proposed forest reference emission level of Guyana submitted in 2014 noted that the national FREL only accounted for carbon dioxide emissions. However, the assessment team acknowledged that the data and information used by Guyana were "transparent and complete" and "in overall accordance with the guidelines" (UNFCCC 2015, p. 1).

6 Stratified sampling design included sampling protocol with 95% precision level (GoG 2015).

7 The average forest area during the 2001–2012 period.

4 Institutional, environmental and distributional aspects

4.1 Governance of forest and land

In the context of natural resources management, several institutions are involved in land use and forest management in Guyana (Table 15).

Table 15. Managers of natural resources in Guyana

Agencies	Mandates
Ministry of the Presidency (MoTP)	The Ministry of the Presidency has oversight over several departments related to the environment. It has also overseen the process of developing the Green State Development Strategy which followed implementation of the Low Carbon Development Strategy (Ministry of the Presidency 2017).
Office of Climate Change (OCC)	The Office of Climate Change (OCC) works across the government to support work on climate adaptation, mitigation and forest conservation. It sits within the Ministry of the Presidency. It had overall responsibility for consultations on Guyana's Low Carbon Development Strategy (LCDS) and works closely with the REDD Secretariat. The OCC has worked with the Ministry of Indigenous Peoples Affairs regarding the opportunity for Amerindian villages to opt-in to the LCDS and the implementation of REDD+ benefit sharing mechanisms. The opt-in mechanism is still under development.
Department of Environment (DoE)	The Department of Environment is hosted by the Ministry of the Presidency. It oversees the activities of environmental compliance and management, Protected Areas development and management, national parks management, and wildlife conservation and protection. The Department supervises the Protected Areas Commission, the Environmental Protection Agency and the Wildlife Management and Conservation Commission (Ministry of the Presidency 2015, 2017).
Protected Areas Commission (PAC)	The Protected Areas Commission (PAC) has management oversight over four of the five Protected Areas in Guyana – Shell Beach, Kaieteur National Park, Kanuku Mountains and Kanashen community-owned Protected Area. It also has the mandate to expand the Protected Areas system of Guyana. In 2015, under the Paris Agreement, Guyana committed to increase the Protected Areas system by 2 million ha. The Iwokrama Protected Area – a Government of Guyana and Commonwealth partnership – while part of the system, is managed independently and has its own legislation, the Iwokrama Act 1996.
Guyana Lands and Surveys Commission (GLSC)	Guyana Lands and Surveys Commission (GLSC) is the main agency responsible for land surveying and administration in Guyana. It also has a mandate for the development and management of the land information system and is the main repository of GIS data and maps in Guyana. It is responsible for the purchase and lease of all public lands in Guyana. This commission is under the Ministry of the Presidency.

Continued to next page

Table 15. Continue

Agencies	Mandates
Ministry of Natural Resources (MNR)	This ministry has oversight over natural resource extractive industries in Guyana mainly pertaining to forestry and mining. The MNR also oversees the Forest Carbon Partnership Facility program, which closely collaborates with the Guyana Forestry Commission. Oversight for the petroleum industry has been moved directly under the Ministry of the Presidency, and linked to the Department of Energy.
Guyana Forestry Commission (GFC)	This commission is semi-autonomous, and has direct oversight over issues linked to the technical implementation of REDD+, including oversight of the MRVS. It has the following mandates: • Advise on forest policy, law and regulation • Administrate and manage all state forest • Develop and implement forest protection and conservation strategies • Monitor standards of forest sector operations • Forest research, education and training
The REDD Secretariat under the Guyana Forestry Commission	The role of the GFC's REDD Secretariat is to: • Implement and monitor unconditional commitments relating to the forest sector • Support conditional commitments relating to the forest sector • Ensure MRVS and reference level (RL) implementation • Support the MNR in the REDD+ Strategy development • Support engagement with the Green Climate Fund • Support national programs such as the National Communication process, training needs assessment (TNA) and reporting to the United Nations Convention to Combat Desertification (UNCCD).
Guyana Geology and Mines Commission (GGMC)	The GGMC is responsible for monitoring all activities in the mineral sector on behalf of the government, as well as for providing basic prospecting information and advisory services on the available economic mineral prospects. The commission acts as a national repository for all information relating to geology and mineral resources which will facilitate an understanding of the resource base of the country, and provides advice to the government on appropriate mineral policy matters so that Guyana's mineral resources can be rationally developed and utilized.
Ministry of Indigenous Peoples Affairs (MOIPA)	This ministry works to enhance the social, economic and environmental well-being of indigenous peoples and their lands, through collaboration, sustainable development and appropriate legislation. Its mission is also to ensure the preservation of indigenous culture and traditional knowledge. Since there is land ownership by indigenous peoples in Guyana, this ministry collaborates with other agencies, such as the Lands and Surveys Commission, regarding new land titles and also expansion of titles.
Environmental Protection Agency (EPA)	Established under the Environmental Protection Act (1996) the EPA is a regulatory agency mandated to implement measures for effective protection and management of the natural environment, coordination of conservation programmes and sustainable use of resources, and assessment and management of the impacts of development activities on the environment through the integration appropriate environmental provisions, planning and monitoring.

The GFC has refined its legal framework to curb illegal logging through the establishment and implementation of:

1. A log tracking system that tracks wood produce back to stump, verified using real time technology
2. 53 monitoring stations across the country to track movement of lumber from logging sites to sale points, primarily located on the coast
3. Log export policy, monitoring log export permits granted by GFC following certified timber grading, assurance of legality, second-

and third-level checks of allocation, pre-harvest inventories and production
4. Logging concessions, issued by the GFC according to three main categories: Timber Sales Agreements (large concessions), Wood Cutting Leases (medium concessions) and State Forest Permits (small concessions).

Two types of forest concessions for harvesting under Guyana's regulations: *State Forest Authorizations* (Small Concessions) are granted on a bi-annual basis (with possibility of renewal) for small areas of state forest less than 8,097 ha. State Forest *Authorizations (Large Concessions)* are granted for between 25 and 40 years for areas greater than 24,291 ha.

In various areas of the country, small loggers have organized into 69 Community Forestry Associations (CFAs), mainly with the assistance of the GFC's Community Forestry program, to better equip them to deal with forest management and conflict issues in their areas. These CFAs currently manage over 500,000 ha of state forest lands and employ over 2,000 persons.

4.2 International, regional and national policies

4.2.1 National policies and programs

The main relevant laws governing forest uses are: the Mining Act 1989 and Mining (amendment) Regulations 2005, the Forest Act 2009 (1953), the Guyana Lands and Commissions Act 1999, the State Lands Act 1903 and the Protected Areas Act 2011. As over 16% of Guyana's land area is under indigenous ownership, the Amerindian Act is also considered to have influence; indigenous communities practice rotational farming, the impacts of which are considered negligible; however, some communities do also practice commercial mining and forestry on their lands. The most important policies are discussed below.

The Forest Act

In 2009, the 1953 Forest Act was revised in alignment with changes to the National Forest Policy Statement (1997) and the National Forest Plan (2001), both revised in 2011 through a stakeholder consultation process. In 2018, a review of the National Forest Policy Statement and the associated Plan was undertaken, to reflect Guyana's movement away from valuing forests simply for timber, but as a cornerstone of the country's national patrimony which provides a wide range of products and services (GoG 2018). The overall objective of the National Forest Policy is the conservation, protection, management and utilization of the nation's forest resources, while ensuring that the productive capacity of the forests for both goods and services is maintained or enhanced (GoG 2018). Ownership, access and management of forest resources are vested in the people of Guyana. This policy guides the work of the GFC and the use and management of forest resources. Codes of practice, which operationalize the policy, specify the minimum allowable cut and selective tree felling methods. The Forestry Training Centre Inc. (FTCI) provides targeted training to forestry operators in keeping with forest policy and practices. The updating of the Forests Act coincided with the launch of Guyana's payment for forest carbon services initiative.

The Low Carbon Development Strategy

In November 2009, the government embarked on a major development strategy to transform Guyana's economy to a "low carbon, sustainable development trajectory while simultaneously combating climate change"(GoG 2016, p. 1), thereby attracting international funding. In 2009, Guyana's standing forests were estimated to be worth approximately USD 580 million per year (GoG 2010). To demonstrate that the LCDS could be a model for forested nations, the Governments of Norway and Guyana agreed in partnership to implement the strategy, and Guyana set up the Guyana REDD+ Investment Fund (GRIF) to receive revenue flows, including a first commitment of USD 250 million from Norway (2010–2015). The LCDS sets out how the economic case for maximizing the conversion of forest for agriculture, mining and other uses would generate economic value to the nation (EVN) equivalent to USD 580 million annually. The LCDS was Guyana's first step towards low carbon development and several projects were implemented which arose out of other national development strategies, such as the National Development Strategy of 2000.

The LCDS comprised seven key projects in the first phase, namely i) the Amaila Falls Hydropower Project to provide a steady source of clean, renewable energy that is affordable and reliable and is envisioned to meet Guyana's domestic energy needs while removing dependency on fossil fuels; ii) the Amerindian Land

Titling Project to facilitate and fast track the land titling process; iii) the Amerindian Development Fund to support the socio-economic development of Amerindian communities and villages, through the implementation of their Community Development Plans (CDPs); iv) Micro and Small Enterprise (MSE) Development and Building Alternative Livelihoods for Vulnerable Groups by providing access to finance and addressing bottlenecks, including: limited access to finance and technical and business skills; v) Institutional Strengthening in Support of Guyana's LCDS by strengthening the key institutions involved in the implementation of the LCDS to address the impacts of climate change, ensure its effective implementation, and to help Guyana to meet its commitments under interim REDD+ partnerships; vi) Adaptation Project (Cunha Canal Rehabilitation Project) to manage water resources in the East Demerara Water Conservancy (EDWC); and vii) the Hinterland Electrification Programme, to install solar home systems so that every Amerindian household which had not received one through a previous initiative, would benefit in order to improve the social and economic aspects of village life, as solar panels provide electricity for lighting, which facilitates educational and economic activities.

The second phase of the LCDS included five priority projects to be funded by the GRIF, namely, i) Climate Resilience, Adaptation and Water Management to help Guyana better cope with the adverse effects of climate change; ii) Facilitation of Investment in High Potential Low Carbon Sectors: to build on the priority diversification opportunities identified in Guyana's National Competitiveness Strategy; iii) Hinterland and Amerindian Development to build on the land titling and development activities undertaken in phase I; iv) Clean Transportation Programme to examine suitable low carbon transportation options for Guyana; and v) establish a Centre for Biodiversity Research: to enable investment in human resources, infrastructure, facilities and equipment to develop a self-sustaining scientific research center at the University of Guyana (UG).

However, some of these projects were questioned, as is the case of a large hydroelectric power plant project at Amaila Falls, which had concerns of causing deforestation, with alternatives not sufficiently examined (Norconsult 2016).

The Green State Development Strategy

With the change in Government in May 2015, President David Granger's coalition government signaled a shift to a green state development trajectory, thereby broadening sustainable development beyond standing forests and low carbon economy. The recent discovery of oil and gas in significant quantities in Guyana's territorial waters has the potential to transform Guyana to a high-income state. The framework Green State Development Strategy (GSDS), which succeeds the LCDS, has seven central themes (MoFin 2019):

1. Green and inclusive structural transformation – diversifying the economic base, accessing new markets and creating decent jobs for all
2. Sustainable management of natural resources and expansion of environmental services
3. Energy – transitioning to renewable energy and greater energy independence
4. Resilient infrastructure and spatial development
5. Human development and well-being
6. Governance and institutional pillars
7. International cooperation, trade and investment.

The National Strategy for Agriculture in Guyana 2013–2020

This strategy (MoA 2013) aims to support agriculture sector development in Guyana with the aim of moving Guyana to a high middle-income developing country by 2025, providing entrepreneurs with investment opportunities, promoting employment, helping to eliminate inequity and poverty, building Guyana's export portfolio and developing a Brand Guyana that is globally recognized. The Ministry of Agriculture estimates that 1.74 million ha are used for agriculture, including: 318,000 ha for crops (GLSC 2013); 48,000 to 50,000 ha for sugar (Thomas 2016); 130,000 to 140,000 ha for non-traditional crops; and 158,473 ha for livestock.

The Guyana Investment Guide 2007

This guide offers investors a number of investment opportunities, including agriculture and agro-processing, forest products and mining. The Guyana Office for Investment (GO-Invest) has been tasked by the Government of Guyana as the primary contact for investors to facilitate the investment process and expedite applications for investment concessions and government support; and as Guyana's main export promotion agency. According to Go-Invest, "with few exceptions (e.g. small and medium scale mining), foreign and domestic investors receive equitable treatment and both have the right to establish, own

and operate business enterprises, and to engage in all forms of economic activity" (GO-Invest 2007, p. 1).

The National Competitiveness Strategy

The National Competitiveness Strategy (NCS) was designed in 2006 as a practical expression of partnership between the government and private sector, to deliver enhanced national competitiveness and greater economic growth. The NCS has three essential components: (i) *core policies* to improve competitiveness are economy-wide measures which consist of: incentive (demand-side) policies, including macroeconomic policy, competition policy, taxation policy, and trade policy; and supply-side policies, including policy measures with respect to education and training, business development services, finance, investment promotion, infrastructure, export promotion, red tape, and aspects of the legal system; (ii) *sector policies* to address particular obstacles and opportunities facing enterprises on a sector-specific basis; and (iii) *strategic sub-sector policies,* aiming to target centers of dynamism which provide the greatest opportunities for growth and diversification, so as to avoid spreading effort and resources too thinly. Under the NCS, the forestry sector is recognized to be made up of numerous enterprises involved in log production, plywood, timber, round wood, non-timber forest products, fuelwood, manicole palm, and production of value-added forest products. The sector currently contributes around 5% to the GDP and earned the economy USD 40.5 million in 2016. The NCS identified several constraints including a lack of policy definition in the past, deteriorating infrastructure, lack of business reinvestments, evolving unfavorable market conditions, and little apparent interest in generating value-added jobs in timber processing. These constraints are seen as having contributed to the diminishing importance of traditional forestry products over the past two decades.

The National Energy Policy

National Energy Policy 2016 attempts to update the 1994 National Energy Policy of Guyana. The overall objectives of the National Energy Policy of Guyana are to:

- Position the energy sector as an engine of national economic growth using a green development strategy that contributes to the achievement of the Millennium Development Goals
- Minimize the foreign exchange cost of energy to the national economy
- Increase the efficiency of energy use per unit of Gross Domestic Product (GDP)
- Diversify away from imported fossil fuels in the national economy with the deployment of indigenous renewable energy resources
- Enhance environmental sustainability by minimizing the local and global negative environmental impact of the energy sector
- Attain universal access and equitable geographical distribution of green energy services at the least cost to consumers
- Establish a regional export trade of green energy services and commodities
- Develop the oil and gas sector for export.

Guyana became an oil producing country in December 2019 when ExxonMobil and its partners announced that the first commercial crude had been produced from the Liza field, located in Guyana's offshore Stabroek Block (Blackmon 2019). This offshore block is one of the largest oil discoveries of the past decade, with resources estimated at 2.25 to 2.75 billion oil-equivalent barrels (ExxonMobil 2019). In 2017, Exxon Mobil announced investment of over USD 4.4 billion to develop it in 2017 (ExxonMobil 2017).

Stakeholders interviewed and workshop participants expressed their concern that the new discovery of oil and gas, coupled with political interest to reduce dependence on imported petrol supply, have potential to accelerate the rate of deforestation in the country.

These concerns were premised on assumptions that the government might pay less attention to the mining and forestry sectors as focus would shift to the oil and gas sector.

4.2.2 Global governance and international agreements

Guyana has ratified numerous international agreements, such as the UN Convention on Biological Diversity, UN Framework Convention on Climate Change, UN Convention to Combat Desertification, Convention on the International Trade in Endangered Species of Wild Fauna and Flora, and the Rio Declaration on Environment and Development. Guyana also participates in the United Nations Forum for Forests, and has made numerous international agreements (Table 16).

After signing the Paris Agreement, the Government of Guyana also promised to add 2 million ha to its national Protected Areas system.

Table 16. International agreements

International agreements	Objectives/planned activities
Guyana–Norway Agreement (2009)	• Promote the two countries' cooperation in addressing climate change, specifically REDD in developing countries, the protection of biodiversity and sustainable low carbon development. • Agreement for payment up to USD 250 million for 5 years, providing financial support for implementation of Guyana's LCDS and for REDD capacity building via the MRVS.
EU FLEGT (European Commission) Voluntary Partnership Agreement (VPA) in 2012	Strengthen and mainstream Guyana's stakeholder consultation and engagement process to enhance forest governance, improve legal compliance and build in-country capacity for community engagement in forest policy development and implementation.
Extractive Industries Transparency Initiative (EITI)	Guyana became an EITI candidate country in October 2017 (GYEITI 2019). The EITI aims to: • improve openness and accountable management of revenues from natural resources • promote better governance in countries rich in oil, gas and mineral resources, and seek to reduce the risk of diversion or misappropriation of funds generated by the development of a country's extractive industries.
Forest Carbon Partnership Facility Project (FCPF)	The FCPF aims to: • provide financial and technical assistance to support efforts of the government to establish an enabling framework and build their capacity for REDD+ • assist the government with (i) improvements in the organization of the country for REDD+ Readiness, including stakeholder consultations; and (ii) the preparation of the Guyana REDD+ Strategy and Policy to facilitate Guyana's access to additional funding under performance-based incentives. Another project under the FCPF that impacts indigenous groups is the 'Grievance and Redress Mechanism (GRM) for REDD+ Implementation in Guyana'. This project aims to develop a national coordinating structure and procedures to receive, process and investigate complaints from affected parties/communities under the REDD+ implementation in Guyana. This mechanism will be based on engagement and dialogue, must be accessible, transparent, rights compatible, fair, accepted and benefit from continuous learning (FCPF 2019).
Guyana's Nationally Determined Contributions (NDCs) (2016)	Guyana's NDCs comprise conditional and unconditional policies, measures and actions to reduce the normative business-as-usual growth in emissions. The forestry and energy sectors are the key focuses. Unconditional policies • Forestry: Improve sustainable forest management and legal compliance; increase monitoring; finalize and implement EU FLEGT VPA; add value to timber; strengthen the MRVS (and CMRV); and implement the opt-in mechanism. • Energy: Renewable energy (solar, wind, water and biomass for national grid and hinterland communities). Conditional contributions • Contribute to avoided deforestation and achieve an effective REDD+ program. • Avoid 48.7 $MtCO_2e$ emissions through an emissions reduction program in mining and logging. • Eliminate near-complete dependence on fossil fuels and develop 100% renewable energy supply by 2025.

4.3 Decentralization and benefit sharing

In Guyana, decision making in natural resource management sectors is centralized. The Guyana Lands and Surveys Commission (GLSC) is mandated with public land administration (regional and national planning), together with other relevant natural resource government agencies. GLSC functions also include overseeing

rivers and creeks in Guyana, carrying out surveys of land and water resources in Guyana, maintaining a national survey control system, evaluating offers for public land, and issuing grants or leases. Local government falls under the Ministry of Communities, with local government arms being mainly administrative and focused on urban planning.

Currently there are no direct legislative provisions for benefit sharing from land use and land use revenues between levels of government and between governmental and non-governmental entities. However, enshrined in Guyana's Constitution, Article 149 J(2), is the framework for use of natural resources and promotion of economic and social benefits: "The State shall protect the environment, for the benefit of present and future generations, through reasonable legislative and other measures designed to prevent pollution and ecological degradation; promote conservation; and secure social development and use of natural resources while promoting justifiable economic and social development" (GoG 1980, p. 103).

As per the bilateral REDD+ agreement with Norway, the OCC is developing an opt-in mechanism to tap into REDD+ project funds, for indigenous communities with titled ownership of forested lands who choose to opt-in; this will be performance based. Through the Norway agreement, many indigenous communities have also benefited from funds to develop community projects, most of which aimed at economic development. However, the MoU with Norway currently covers just the State Forest Estate; those communities that have full title to their land lie outside this agreement. Both the LCDS and the MoU with Norway make explicit reference to the fact that titled Amerindian communities will be able to opt-in to the REDD+ agreement, but there has been no deadline for decisions. Should they choose to participate, communities will receive "a pro-rata share of forest compensation payments" (Office of the President 2010, p. 3). There has been no indication made so far of any future stipulation made on communities that choose to participate, beyond having to comply with existing forest regulations and the need to determine any action they might take on the use of traditional rotational farming methods. According to the interviewees, the opt-in mechanism is still being developed and piloted, and stakeholders are uncertain on how this structure will be fully operated on the ground.

4.4 Indigenous rights

Guyana has ratified International Labour Organisation (ILO) Convention 169 and Guyana's legislation goes beyond, granting more extensive rights via its Constitution, the Amerindian Act of 2006, the Mining Act 1989, Labor Act 1998 (98:01) and the Trafficking in Persons Act 2005. Guyana is also a signatory to the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), which covers land rights inclusive of ownership (including reparation, or return of land, i.e. Article 10) and environmental issues (Articles 26-30 and 32).

Guyana's Constitution (Chapter 3 Section 40) addresses the issue of fundamental rights and freedom of individual Guyanese. Part II, Title 1 Section 149 (y) also directly emphasizes indigenous peoples' rights, stating that, "Indigenous Peoples shall have the right to the protection, preservation and promulgation of their language, cultural heritage and way of life" (p. 168). That includes rights to resources, farming, hunting and fishing. The Constitution also sets out the need to establish an Indigenous Peoples' Commission to "enhance the status of Indigenous Peoples and respond to their legitimate demands and needs to promote and protect their rights" (p. 167).

The Revised Amerindian Act of 2006 has objectives to protect the fundamental rights and freedoms of indigenous peoples, including access to land, right to life, liberty, expression, movement, and the protection from slavery and forced labor, culture and traditions. Over 14% of Guyana's land territory is under title by indigenous peoples. The Act also gives guidance to issues concerning land titling, intellectual property, environmental protection, mining and forestry and village governance. At present, there are ongoing consultations regarding revision of the Amerindian Act of 2006.

Some key organizations involved in indigenous issues include: the National Toshaos Council (NTC), established in accordance with the Amerindian Act 2006 as a body corporate comprising all Toshaos (leaders of Amerindian communities); the Amerindian Peoples Association (APA); the Guyana Organization for Indigenous Peoples (GOIP); the Amerindian Action Movement of Guyana (TAAMOG); the National Amerindian Development Foundation (NADF); and the Indigenous People's Commission. Other organizations within Protected Areas are the North Rupununi District Development

Board (NRDDB) and the Kanuku Mountains Community Representative Group (KMCRG).

The indigenous population of Guyana, the Amerindians, account for approximately 9.2% of the population and own approximately 14% of land, forming the majority of land not held centrally by the state (Office of the President 2013). The Amerindian population comprises nine tribal nations including the Lokono (Arawak), Carib, Wapichan, Makushi, Patamona, Warrau, Akawaio, Arekuna and Wai-Wai (Griffiths and Anselmo 2010). Communities, and the land that they own, are governed by the provisions of the 2006 Amerindian Act, that outlines community management structures such as Village Councils and democratically elected Chiefs or Toshaos with responsibility for managing the village's land and resources, and protecting and preserving both those resources and the village's culture. Migration from Brazil and Venezuela have put further pressure on existing land and the economy in Guyana (Stabroek News 2018). Indigenous groups have been included in participatory processes related to REDD+ processes thus far in Guyana.

There are currently 116 titled communities (personal communication with Ministry of Indigenous Peoples Affairs 2017) spread across all regions in Guyana, with the majority in the south and west of the country, and in or around forested areas. There are also 46 satellite communities. A major current issue regarding Amerindian lands is the extension of existing titled lands. Several communities have applied for land extensions and are awaiting approval. It has been difficult to get the exact figures for this. Amerindian communities are generally amongst the poorest in Guyanese society, with the UNDP classifying 77% of Amerindians as poor. Amerindians have been struggling to make their claim to land and politics heard (Bulkan 2013).

Communities depend on both subsistence and cash-earning activities, though the mix between the two depends on the type of community and region, with remoteness often being the limiting factor for the latter (Griffiths and Anselmo 2010). Subsistence activity focuses on traditional rotational farming, complemented by hunting, fishing and gathering. Cash-earning activities include full-time government-funded jobs such as teaching and healthcare, sale of raw or processed food crops, livestock and fish, forestry products and crafts, occasional work as laborers, drivers, boatmen, tourist guides and NGO project workers, and mining activity either within or outside communities (Griffiths and Anselmo 2010). As the goldmining sector has boomed in recent years there is some anecdotal evidence that Amerindians have been increasingly involved in the sector either in their own titled land, or migrating to work on mine sites across the country.

4.5 Tenure rights to carbon, land and trees

Although there is no official land use policy, there is a land use plan (GLSC 2013). According to this plan, land in Guyana is divided into Public Land, Private Land and Amerindian Land. Public Land is all land that is not owned privately or by Amerindian communities. This can be sub-divided into State Land and Government Land. The GLSC has jurisdiction over State Lands, with the exception of municipalities and Protected Areas, which are governed by elected representatives and the Protected Areas Commission, respectively. GLSC administers leases for agriculture. The GGMC and the GFC administer leases for mining and forestry resources, respectively. Each of these agencies can issue titles for different purposes over the same land space, often resulting in land use conflicts. Government Lands are those purchased by, or granted to, the government, including for hospitals, schools, government administrative buildings and land development schemes. Municipalities can contain State, Government and Private Lands (GoG 2013).

Forest in Guyana is largely owned directly by the state, either through the State Forest Estate, which accounts for 66% of forested areas, or State Lands, accounting for a further 14% (Table 17). Another 14% of forested areas are titled Amerindian Lands (approximately equivalent to the overall percentage of land owned by indigenous communities in the country); the remaining 6% are Private Lands (GFC 2015). The State Forest Estate is managed by the Guyana Forestry Commission, while Amerindian communities have the rights to manage forests on their own land, unless they plan to sell timber outside their communities.

The State Forest Estate and State Lands grew out of the Crown Lands of the old British colony and now account for 83% of total land area (GFC and Indufor 2012). The State Forest Estate is managed by the GFC, with the responsibility for managing

Table 17. Estimates of land allocation in Guyana

Guyana land allocation estimates	Million ha
Total land	21.5
Total forest	18.6
State Forest	12.9
Other State Lands and Private Lands	4.3
Protected Areas*	1.8
Amerindian Lands	3.4

* Includes Kanashen, titled Indigenous Protected Area

State Lands falling to the GFC, the GGMC and the GLSC, depending on whether the land use is forestry, mining or agriculture. Over half of the State Forest Estate has been granted as logging concessions and includes 16 large-scale leases, 410 small-scale leases and 3 State Forest Exploratory Permits (GFC 2017a). However, land titling and demarcation are contested areas in Guyana (Bade 2013).

Overlapping land use issues, particularly from mining and forestry, and mining and indigenous lands, remained problematic in some areas. Generally, these issues are addressed by responsible regulatory agencies depending on the particular issue, such as the GFC (for forestry) and GGMC (for mining). Communities have benefitted from assistance with conflict resolution from the Ministry of Indigenous Peoples Affairs, formerly the Ministry of Amerindian Affairs. In 2017, the Government of Guyana set up a Land Commission of Inquiry, "to examine and make recommendations to resolve all issues and uncertainties surrounding the claims of Amerindian Land titling, the individual, joint or communal ownership of lands acquired by freed Africans, and any other matters relative to land titling in Guyana" (GoG 2017, p. 2).

Private Land is land held by private or corporate interests. The administration of Private Land is carried out by the Land Registry under the Office of the Attorney General. According to the Government of Guyana (IBP 2013, p. 222), "there are two systems of land law and property recordings governing the private market, namely, the 'Transport Index' based on Roman Dutch Law and the 'Index of Land Transfer of Title', based on the Torrens System derived from English Law. The main difference between the two systems is that a transport of land from one entity to another must pass through a court, whereas a transfer of title does not" (Guyana Lands and Surveys Commission 2013, p. 84). Much of the land in municipalities such as Georgetown (the capital city) and New Amsterdam are transport land, as is some of the agricultural land in the coastal zone.

Mineral mining is governed by the Mining Act (GoG 1989) and the Mining (Amendment) Regulations (GoG 2005). The Mining Act vests all mineral rights in the State, and allows licenses or permits to be granted by the GGMC. In 2011, licenses were issued for over nine million ha for the purpose of mineral mining in the six mining districts (Table 18). Claims were more concentrated in Mining District 3 (Mazaruni).

In January 2018, the Government of Guyana signed an agreement worth USD 15 million with the UN's Food and Agriculture Organization (FAO) to develop the country's first National Land Policy. The Sustainable Land Development and Management agreement will also cover the strengthening of institutional and human resource capacities.

The fundamental objection to legal structures which allowed for sovereignty of the colonial powers to remove any legal rights indigenous communities had to their lands, reportedly inconsistent with international law (Dooley and Griffiths 2014), resulted in demands for a reform of the Amerindian Act and the land titling process. However, when the Act was passed in 2006, it was met with criticism that it sustained the power of the Minister of Amerindian Affairs to "veto proposed title boundaries and the distinction between titled and untitled communities," although it abolished the power of the government "to extinguish title without consultation or consent" (Laing 2018, p. 13). Comments from the MOIPA indicate that the process of review of the legislation would commence in the near future and would include stakeholder consultations.

Table 18. Licenses issued (2011)

Mining licenses	Area (ha)
Claims (small-scale)	159,979
Mining permits (medium-scale)	288,703
Prospecting licenses (large-scale)	803,553
Mineral licenses (large-scale)	17,886
Reconnaissance permits (large-scale)	8,121,425
Quarry licenses	1,142

5 The political economy of deforestation and forest degradation

5.1 Political context

Guyana is a parliamentary democracy headed by an Executive President who is the head of both state and government. The Cabinet is one of five supreme organs of democratic power. The others are: Parliament, the National Congress of Local Democratic Organs, the Supreme Congress of the People, and the President. The legislature is made up of a single-chamber 65-member National Assembly, headed by a Speaker. The judiciary is headed by a Chancellor who is assisted by a Chief Justice. Guyana's final court of appeal is the Caribbean Court of Justice.

The country is an independent and sovereign nation with laws and institutions that promote and support a parliamentary form of democracy. The Constitution is the supreme law of the land. The three arms of national government (executive, legislature and judiciary) are augmented by local democratic organs that decentralize the administration of the state and allow for citizen participation in decision making. However, power in Guyana lies in the Office of the President.

Guyana's governance regime is reminiscent of many other developing countries, in that it suffers from perceived corruption, issues with government effectiveness and capacity, and rent seeking. Transparency International ranked Guyana 133 out of 176 countries in 2012, with a score of 28 out of 100 in its 2012 Corruption Perception Index (Transparency International 2012). Improvement was shown in the 2019 report where Guyana attained a score of 37 out of 100 (Figure 6).

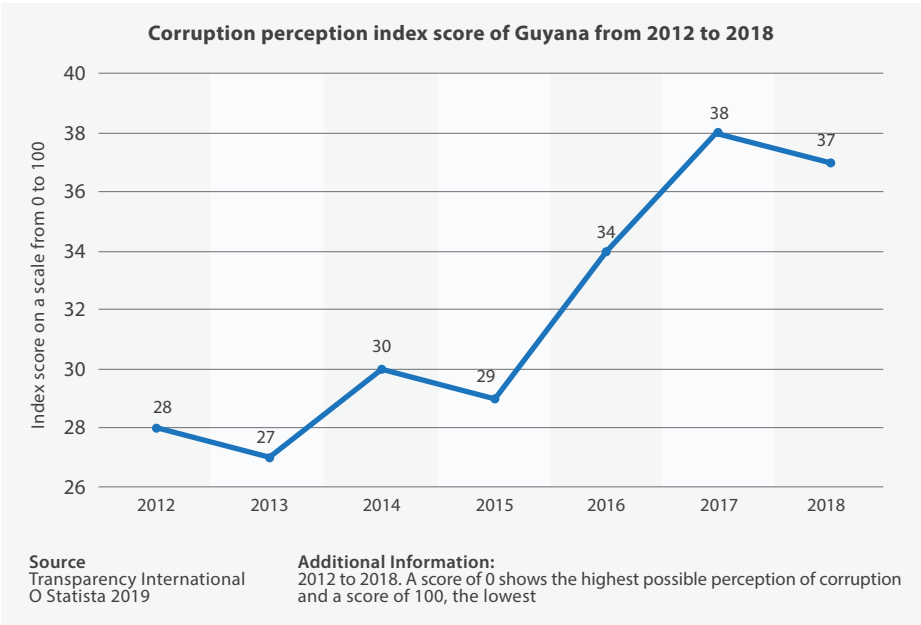

Figure 6. Perception of corruption in Guyana (2012–2018)

Source: Pasquali 2019

Historically, literacy rates have been high compared with the region as a whole; total adult literacy rate between 2008 and 2015 was 85% (UNICEF 2013). However, political instability paired with economic stagnation has resulted in a mass emigration of the skilled workforce (Bade 2013).

5.2 Political economy of drivers of deforestation and degradation

The economy is dominated by agriculture, mineral mining and infrastructure services. Approximately 60% of Guyana's gross domestic product (GDP) is derived from the export of sugar, rice, shrimp, gold, bauxite and timber, with recent increases in gold production offsetting declines in the sugar industry (CIA n.d.). The economy is heavily dependent on agricultural commodities and extractive industries. Mining accounted for 21% of GDP, up from 11% in 2006, reflecting recent increases in both mining activity and commodity prices (Guyana Bureau of Statistics 2012). Agriculture's share declined from 24% in 2006 to 19% in 2012 and is expected to drop further with recent closures of several sugar estates. For foreign exchange, Guyana relies heavily on a small number of commodities, with gold, predominantly from small-scale operations, and bauxite contributing over 60% of all exports by value in 2012, and rice and sugar accounting for another 25% (Guyana Bureau of Statistics 2012).

The dependence on mined products, especially gold, has grown in recent years, despite the closure of the only large-scale gold mining operation in 2006 (Laing 2014). This growth in gold exports has resulted from both increased gold prices and increased activity. Indeed, a gold price boom in the mid to late 2000s amplified the country's reliance on gold mining as a source of growth and foreign exchange. Raw gold accounted for 58% of exports by value in the period January to May 2017 (Guyana Bureau of Statistics 2017), and between 2006 and 2016, value-added from the gold industry increased on average 15% per annum, compared with average growth in GDP as a whole (4.2%). Meanwhile, the forestry sector experienced declines due to the low productivity of the forest, high extraction costs and overexploitation of key species, with value-added price in the sector falling by 1% per annum between 2006 and 2016 (Guyana Bureau of Statistics 2017).

A comparison of the price of gold on the world market (London Fix) between 2009 and 2017 and the corresponding deforestation rate during the same period is presented in Table 19. Table 19 highlights that the highest recorded LUC occurred in 2012 when gold prices peaked, and subsided as the price fell.

The contribution of timber to the economy is relatively small, contributing only 3% of exports, while imports are dominated by fuel and lubricants, making up 31% of all imported value (Guyana Bureau of Statistics 2012). This fuel is not just for Guyana's growing transportation sector, but also for the diesel generation that dominates Guyana's electricity generation capacity.

Recent discovery of oil offshore in significant quantities has the potential to transform Guyana's economy. So far, 4 million barrels of oil equivalent have been estimated for production and the first oil is expected to be brought to the surface in 2020.

Table 19. Annual average gold prices (USD per ounce at the London Fix)

Year	Price of gold (USD/oz)	Annualized deforestation rate (%)	Notes
2009			
2010	1,224	0.056	
2011	1,572	0.054	
2012	1,689	0.079	
2013	1,411	0.068	
2014	1,260	0.065	
2015–2016	1,206	0.050	24-month average
2017	1,257	0.048	8.851 ha LUC

Source: Kitco 2019

5.2.1 Mining

The mining sector has increasingly become the driving force of the economy, and representing the major source of exports and foreign currency. Small and medium-scale gold mining industry boomed and, with rising international prices, was helped by a stable legal framework and immigration of Brazilian expertise and technology (Laing 2014). A report in 2007 stated that the economy's dependence on gold was likely to be underestimated since almost a third of sales go through channels other than to the Guyana Gold Board as required by law (International Human Rights Clinic 2007). However, interviews with GGMC officials reported that this has lessened.

As the economic power of miners has grown over time, they have become important stakeholders playing a key role in informing the policy making process. According to government interviewees, mining accounted for 21% of GDP in 2012, up from 11% in 2006.

This increased economic dependence on mining has taken place at the same time as Guyana has started to receive results-based REDD+ finance. Yet, while miners have participated in the government's LCDS and GSDS public consultations, mining communities have generally not been involved in REDD+ discussions in Guyana.

5.2.2 Oil, petrol and gas

To date, 13 offshore wells have been found to have commercial quantities of oil and gas, with the latest 15th discovery made by Exxon Mobil in December 2019 (Blackmon 2019). The company announced its intention to drill more than 10 exploration and appraisal wells in offshore Guyana in 2019 and 2020. A 2019 article in the Stabroek News newspaper reported "the potential for at least five floating, production, storage and offloading (FPSO) vessels on the Stabroek Block, producing more than 750,000 barrels of oil per day by 2025" (Stabroek News 2019c). If exploited, the find would place Guyana amongst the largest of Latin American oil producers.

Much attention is being directed towards the potentially significant contribution that exploitation of its hydrocarbon resources could make to the country's economy. As a consequence, there is slow movement towards other alternative revenue streams, including REDD+ plans. Discussions with stakeholders revealed concerns regarding the oil sector's impact on conservation efforts and agriculture investments; stakeholders also highlighted an unfair playing field for less-skilled Guyanese, given the influx of overseas workers. It was also felt that legislative development and environmental regulations are not moving at a pace that is suitable for impending oil extraction in 2020. There are also concerns that the concept of 'big money' may negatively impact the political landscape of Guyana – transparency and accountability need special attention to avoid the 'Dutch disease' that has plagued some oil-rich countries.

The fledgling petroleum sector needs knowledgeable and astute leadership to ensure the country's patrimony is carefully managed, its environment protected, and the benefits accrued are secured and equitably shared for the benefit of all Guyanese. The newly formed Departments of Environment and Energy are steps in the right direction, and need to be fully staffed with capable and experienced personnel and boosted by the requisite policies, legislation, plans and budgets that stipulate, oversee and manage the sector and its actors.

Earlier uncertainty regarding the responsibility and oversight of oil and gas development within the highest government structures were addressed in October 2018, when then Minister of State Mr. Joseph Harmon "[…] reiterated that responsibility for the oil and gas sector rests solely with President David Granger" (Ministry of the Presidency 2018).

5.2.3 Infrastructure development

Infrastructure development has always been a national priority in Guyana (Chabrol 2018). Guyana is the first South American country to sign onto China's Belt and Road Initiative (DPI 2019).

The Linden–Lethem road, connecting Georgetown to Lethem (a border town with Brazil), has been targeted for upgrade to an all-weather surface for several years. Recent work has addressed the corridor from Linden to Mabura, with plans to install a bridge across the Essequibo River at Kurupukari and connect with the Iwokrama Forest, with onward access to the Rupununi and other areas, including Brazil. Currently, road users

cross the river via pontoon services and the road is lateritic in most areas. A fresh round of stakeholder consultations commenced in April 2019 on road design, with associated considerations for the long-awaited upgrade of this important artery.

An expansion and modernization project for Cheddi Jagan International Airport, Guyana's main air transport facility, commenced in January 2013 to cater for the increasing number of passengers. The airport witnessed passenger traffic growth of over 42% from 2000 to 2012 and needed more space to facilitate this growth. The USD 150 million project was scheduled to conclude in 2015 with the runway extended from 2,270 m to 3,219 m to accommodate larger aircraft, and a secondary runway, eight international parking positions including a fixed place for cargo aircraft, and advanced air navigation systems amongst other improvements (Airport Technology Magazine n.d). The project has experienced significant delays due to technical challenges and concerns about the contract and its execution (inewsGuyana 2016; Stabroek News 2019a). However, some of project's achievements are rehabilitation of the departure area and a new arrivals area that includes a boarding corridor and bridges between the terminal building and aircraft.

6 The REDD+ policy environment

6.1 Broader climate change policy context

The country has developed a number of instruments, strategies and plans to guide Guyana's response to climate change and land degradation (Table 20).

As noted in the previous section, Guyana's LCDS 2009 also set out a clear legal framework for REDD+. Post 2015, the LCDS was used as one of the foundational documents to develop a new development strategy for Guyana. Public consultations were completed and the draft strategy has been taken to Cabinet. Although the LCDS was expected to drive transformational change, progress has been slow, mainly due to a persistent top-down, centralized approach; this has also indicated a lack of capacity among national government entities to implement LCDS (Kaieteur News 2016).

However LCDS – and its successor the GSDS – is just one piece of the puzzle, as the Government of Guyana has also strengthened its climate change policy framework through (i) the new National Forest Plan 2018, along with a National Forest Policy Statement 2018, designed to encourage best practice in the sector; (ii) the new National Land Use Plan 2013, to "provide a strategic framework to guide land development in Guyana" (GLSC 2013); and (iii) the Protected Areas Act 2011, to establish more Protected Areas as a national response to mitigate climate change through ecosystem maintenance.

Table 20. Annotated list of climate-related policies, strategies and plans

Climate-related policy, strategy or plan	Period	Responsible institution	Description of the policy, strategy or plan
Initial National Communication (INC)	2002	Office of the President	
Climate Change Action Plan	2001	Office of the President	Supplements the INC, this action plan identifies adaptation as one of nine program areas. It links the climate change to the national development agenda.
Climate Change Adaptation Policy and Implementation Plan	2001	Ministry of Agriculture / Hydro-meteorological Department / National Ozone Action Unit	Complements the INC and Guyana Climate Change Action Plan with a more detailed focus on coastal low-lands.
National Adaptation Strategy for the Agricultural Sector	2009–2018	Ministry of Agriculture	Aims to effectively reduce the risks posed by climate change and position the agricultural sector to adapt. Among its objectives is to build resilience and adaptive capacity within the sector.
Second National Communication	2012	Ministry of Agriculture	Focuses on Guyana's 'national circumstances' and a 'vulnerability and adaptation assessment'.
National Climate Change Policy & Action Plan	2020–2030	Office of Climate Change	Lays out the national climate action vision, high-level goals and objectives, for Guyana. Consists of 19 policy objectives addressing adaptation, mitigation, resistance building and risk reduction.

6.2 Institutional setting for REDD+

Before 2018, although Guyana did not have an official national REDD+ strategy and strategic actions were instead framed under the LCDS, national REDD+ policies were enabled through a set of policy initiatives (Box 1).

In April 2018, the Ministry of Natural Resources contracted a consortium of consultants to prepare the National REDD+ Strategy, along with a Social Environmental and Strategic Assessment (SESA) and an Environment and Social Management Framework (ESMF). The Ministry of Natural Resources conducted consultations on the first draft of Guyana's National REDD+ Strategy on 7–8 March 2019 in Georgetown and consultation at different regions will be carried out throughout the year, with support from FCPF. By the time this report was written, there was no final decision on the National REDD+ Strategy. However, in parallel with national policy development, a sub-national REDD+ initiative is also being piloted in Guyana (see Box 2).

Guyana's new government, elected to office in May 2015, did not make a clear statement on how Guyana would proceed with REDD+ and with the Letter of Intent for performance-based funding with Norway (2009–2016). Public statements have indicated that the LCDS launched in 2009 would not maintain its prominence and would be replaced by a 'green economy' approach. This has led to some uncertainty in terms of national ownership and commitment, as well as availability of performance-based funds for REDD. However, in April 2017, a framework document for the GSDS was published, replacing the LCDS.

Box 1. Enabling conditions and the legal framework for REDD+ policies in Guyana

- **REDD+ reporting (MRVS)** – robust MRVS applied nationwide.
- **REDD+ governance (EU FLEGT)** – a key REDD+ enabling indicator; Guyana signed a VPA with the EU in 2018.
- **REDD+ supporting legislation (Forest Regulations)** – drafted and gazetted by Parliament in 2018 to maintain low deforestation and forest degradation rates through updated forest laws.
- **REDD+ supporting policy (National Forest Policy)** – revision of National Forest Plan and Policy, with REDD+ integrated, so as to manage development and impact in an integrated manner.
- **REDD+ supporting guidance** – Codes of Practice developed for the forestry sector, focused on timber harvesting and NTFPs.
- **REDD+ national strategic platform** – Green State Development Strategy (Framework) developed.
- **Benefit sharing** – Opt-in mechanism under development.
- **REDD+ readiness aspects such as safeguards and strategy funded by** Forest Carbon Partnership Facility Project (FCPF).
- **REDD+ international commitments** – Guyana has made commitments under the Paris Agreement through the NDC.
- Forest, mining and energy sectors prioritized, with plan to increase Protected Areas by 2 million ha.

Box 2. Q&A on subnational REDD+ policies and projects

- ***Q: How many subnational REDD+ initiatives are in place?***
- A: One and this is a local (hinterland/indigenous) development fund for REDD+ projects.
- ***Q. Are local REDD+ projects in the country coordinated with the national government? If yes, how?***
- A: Yes. The application process includes review by a steering committee. National government (Office of Climate Change) finances projects through GRIF, and oversees the projects.
- ***Q. Is the sale of carbon credits by subnational initiatives recognized by the national government?***
- A: Not yet.
- ***Q: What kinds of decision-making powers have been devolved to subnational governments (and local government and communities if applicable)?***
- A: The opt-in mechanism is being developed for indigenous communities (councils), to include their lands as eligible for payments for ecosystem services (PES) payments.

Source: Analysis and key informant interviews with NGOs key informants

The government also started meeting with its Norwegian counterparts to extend the Letter of Intent beyond 2016, and to negotiate a possible new agreement.

6.3 REDD+ financing

To implement the financing aspects, the GRIF was set up in October 2010 with partner entities the World Bank, Inter-American Development Bank (IDB) and the United Nations Development Programme (UNDP). This multi-contributor trust fund was established to: "(i) manage payments provided by Contributors to the GRIF for forest climate services provided by Guyana; and (ii) transfer these payments and any investment income earned on these payments, net of any administrative costs of the Secretariat and the Trustee, to Partner Entities for Projects and activities that support the implementation of Guyana's LCDS" (GRIF Steering Committee 2011, p. 6).

According to the official GRIF webpage, "the GRIF represents an effort to create an innovative climate finance mechanism which balances national sovereignty over investment priorities while ensuring that REDD+ funds adhere to the highest internationally recognized standards for financial, environmental and social safeguards" (GRIF Steering Committee 2011, p. 2). This is a temporary mechanism, pending the creation of an international REDD+ mechanism, and in that way it is innovative and a test case. The GRIF structure includes Contributors, a Steering Committee, a Secretariat, Trustee, Partner Entities, and various Implementing Entities (Figure 7).

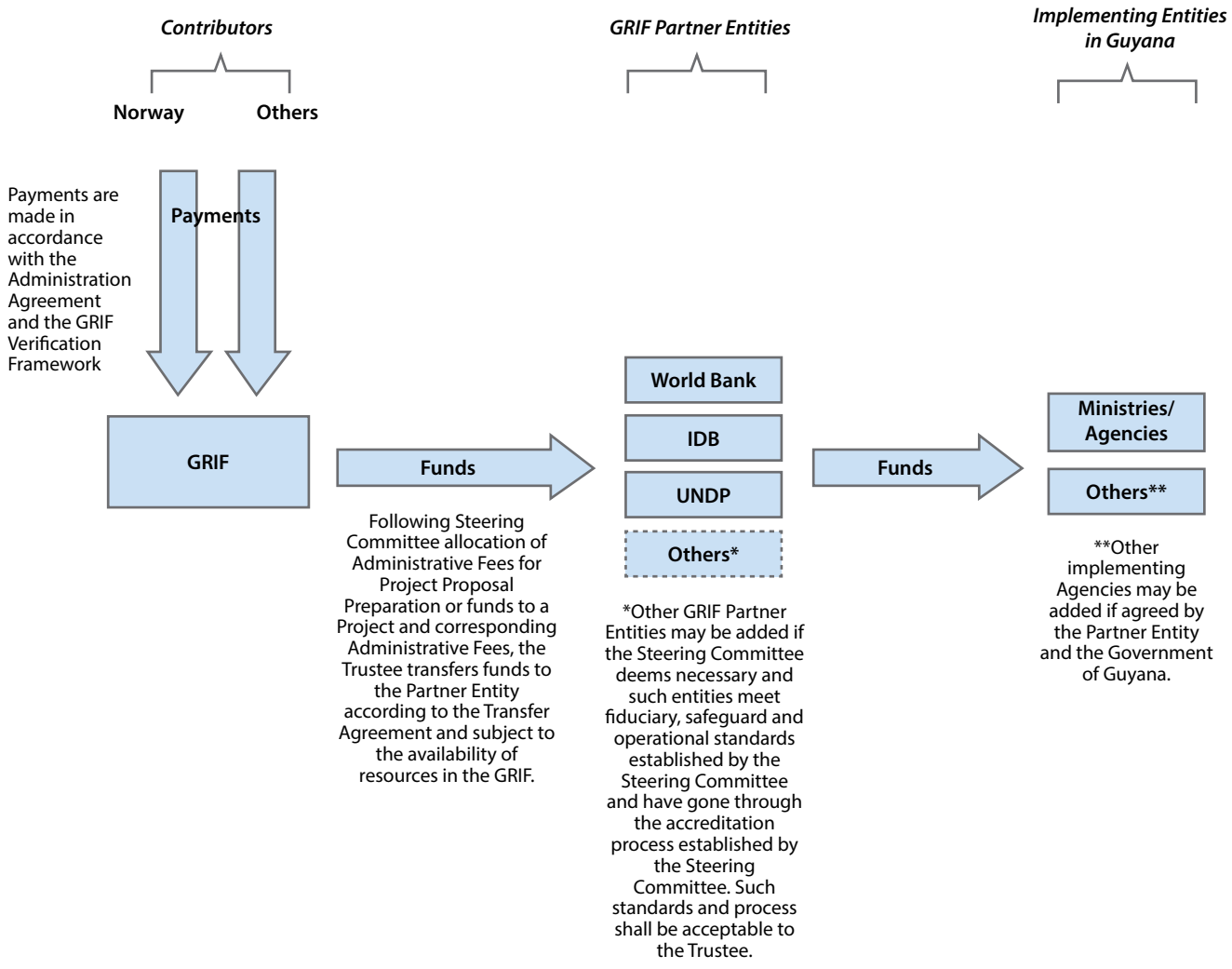

Figure 7. GRIF flow of funds

According to Bade (2013), under this structure, money flows: "(1) from Norway to the World Bank, based on continued low deforestation rates in Guyana, (2) from the World Bank to the Partner entities after they submit projects and are approved by the steering committee, then (3) from the Partner entities to Guyana Ministries to actual project implementation. Each project is carried out by the Partner Entities, which are the IDB, the UNDP or the World Bank, together with a Ministry or other entity in Guyana. All projects are part of Guyana's LCDS, but must follow the safeguards of the specific Partner Entity in each case. The set-up is subject to continuous discussions between Guyana, the World Bank and Norway. The point of controversy is the degree of safeguards attached to the money. Guyana has on several occasions expressed discontent with the fact that the vast majority of the money is still in the World Bank. According to the latest report on the financial status of the GRIF dated May 2012, a total of 69.8 million USD has been transferred from Norway to the World Bank, whereas only 7.2 million is transferred to partner entities. That means that 63 million USD, or 90 percent, is still waiting in the World Bank."

Funding for implementation of Guyana's REDD+ program relies on both the GRIF and the national budget. The government has provided adequate funding to support meaningful consultations on two levels – hinterland and coastal communities. Despite this, more needs to be done to target migrant populations working in the mineral mining sector and in refugee camps along the borders.

In 2013, the fourth year of the MoU, only a small amount of finance had been disbursed, despite Guyana being listed as the country that had received the most REDD funding after Brazil. The most recent update (October 2012) states that NOK 396 million (about USD 70 million), had been transferred to Guyana. According to a key informant, there is no new progress since then. Key informant interviewees, however, argued that transaction cost, time and bureaucracy hinder timely intervention and ease in flow and access to funds, to the detriment of meeting development project needs.

Under the MoU with Norway, up to USD 250 million of performance-related payments would be made to Guyana over five years. There were two sets of performance criteria for payments:

- Indicators of enabling activities: These were a set of policies and safeguards designed to ensure REDD+ efforts contribute to the achievement of the goals set out in the Agreement. These indicators spoke to arrangements to ensure systematic and transparent multi-stakeholder consultations throughout the process; protection of the rights of Indigenous peoples; ensuring environmental integrity and biodiversity protection; ensuring continuous improvements in forest governance; and providing transparent, accountable oversight and governance of the financial support received.
- REDD+ performance indicators: A set of forest-based greenhouse gas emissions-related indicators. It was agreed these indicators would gradually be replaced as the monitoring, reporting and verification system became fully operational. The indicators were developed based on conservative estimates while encouraging the development of a more accurate system over time through building national capacities.

Despite these written commitments, key informant interviewees claimed that Norway has since put in additional requirements which were not part of the original plan, such as Guyana needing to sign a VPA and being member of EITI, leading to additional burdens on the state.

6.4 REDD+ benefit sharing mechanism

No formal decision was made in the MoU regarding carbon credits, formal or otherwise, being transferred between Guyana and Norway (Office of the President 2013). The agreement was purely voluntary, with Norway providing finance in return for Guyana's delivery of results as measured, and independently verified or assessed, against REDD-plus Performance Indicators and Indicators of Enabling Activities.

A no-cost extension with Norway Agreement has been implemented to complete activities. The fifth payment of USD 190 million was released, while the sixth (and final JCN) payment is based on 2014 performance results.

Payments are also based on the independent third-party verification process of Guyana's REDD+ MRVS (whereby the GFC is audited by a firm hired by Norway). All payments under Phase 1 of the Guyana Norway Agreement have been made in 2019 (Stabroek News 2019b).

Finance received has been used for approved REDD+ projects – ICT for Hinterland, the National Opt-in Mechanism, Amerindian Land Titling, the Amerindian Development Fund, the Sustainable Land Development Project, and Cunha Canal.

6.5 Monitoring, reporting and verification

Prior to the Guyana–Norway MoU, there were estimates of deforestation available. Thus, a first step under the agreement with Norway was the development of a national MRVS by the GFC, to "establish a comprehensive national system to monitor report and verify forest carbon emissions resulting from deforestation and forest degradation" (Figure 8; Box 3). The MRVS was developed as performance measurement mechanism for REDD+ with focus initially placed on the development of two primary components: (i) a framework for forest area change assessment and monitoring; and (ii) forest carbon stock measurement and monitoring.

The national-scale MRVS is identified as a national priority of Guyana's REDD+ program. Guyana's MRVS Roadmap, developed in 2009, aimed to build a comprehensive national system to monitor, report and verify forest carbon emissions resulting from deforestation and forest degradation. In addition to this national-level MRV effort, a community-level MRV initiative (CMRV) was launched in Annai and Konashen to develop a community-based system to manage and monitor natural resources and well-being, facilitate capacity building in the communities, and create a replicable community model that could be integrated into the national MRV system.

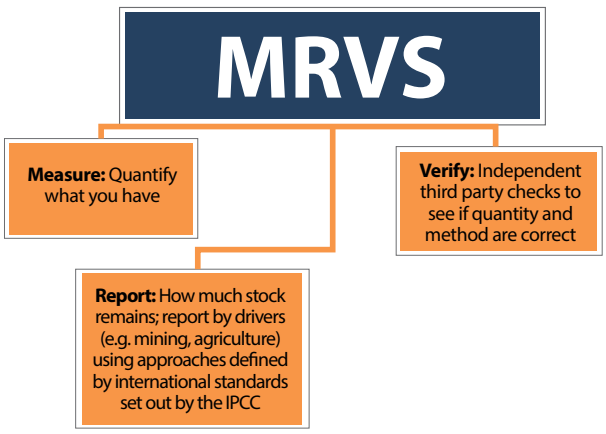

Figure 8. National Monitoring, Reporting and Verification System (MRVS)

Since 2010, there have been seven national-level assessments done on an annual basis. In 2010, the first assessment monitoring forest change was completed using mainly Landsat 5. In the following year, a combination of Landsat 5 and 7 was used, and for the first time, 5 m high-resolution imagery, with RapidEye coverage assessing approximately half of Guyana, where the majority of land use changes were taking place. Forest change in 2013 was determined using high-resolution imagery for the whole of Guyana. The current method follows careful systematic manual interpretation of satellite imagery, to identify deforestation based on different drivers of change.

Guyana's formal definition of a forest sets a minimum mapping unit (MMU) for deforestation of 1 ha, and a country-specific definition of 0.25 ha for degradation. The total forested area of Guyana is estimated as 18.39 million ha.

Forest area change assessment in Guyana is undertaken through estimation of gross deforestation,

Box 3. Key issues around MRV in Guyana

Q: What kind of information exists regarding direct drivers?
A: *The MRVS tracks annual deforestation and degradation by change driver.*

Q: Is this information integrated into the MRV strategy and Forest Reference Emission Level (FREL) development?
A: *The MRVS includes Forest Area Change Assessment and a Forest Carbon Monitoring System. Together, these determine the historical and current patterns of emissions from Guyana's forest, their drivers and the carbon stock present in the various pools, thereby informing Guyana's Reference Level.*

Q: What technology/data is used to assess activity data (e.g. forest loss, land use change), emission factors (e.g. local allometric equations) and policy options?
A: *MRVS uses a combination of GIS and field-based data to report on activity and emissions data. Satellite imagery technology used include Landsat, Planet Scope and Sentinel 2.*

Q: What is the existing MRV capacity, both technical and institutional?
A: *GFC has strong capacity. Other agencies (GGMC and GLSC) are improving through collaboration.*

which assesses: i) the rate of conversion of forest area; ii) forest area, as defined by the Marrakech Accords; iii) conversion of natural forests to tree plantations, which is counted as deforestation; and iv) forest area converted to new infrastructure, including logging roads, which is also counted as deforestation.

Forest cover on 3 February 2009 is used as baseline for monitoring gross deforestation, and reporting is based on medium resolution satellite imagery (5 m resolution) and *in situ* observations. The Guyana Forest Commission monitors, detects and reports on expansion of human infrastructure.

Guyana also established a Forest Carbon Monitoring System (FCMS), developing a framework which focuses on three sample phases (Table 21; Figure 9).

6.6 Safeguards, stakeholder inclusion and engagement

At national level, the government established the Multi-Stakeholder Steering Committee (MSSC) to manage the LCDS consultation process and later on, take on broader responsibility including "receiving updates and discussing projects under the LCDS, reviewing and discussing various Terms of References and proposals, and discussing Guyana's involvement in international fora related to REDD+." The MSSC consisted of members of government ministries and agencies, and invited members of the country's NGOs and civil society. Despite initial good intentions, the MSSC encountered a number of challenges; these included the fact that it did not include parliamentary opposition; it was perceived as being dominated by senior government officials; and it lacked a clear mandate or terms of reference (Laing 2018). Our interview results confirmed some of this, with key informants indicating concern on how inclusive the REDD+ decision-making process is in Guyana, both in terms of understanding and implementation (Box 4).

Stakeholders interviewed also have different perceptions on the future of REDD+ in Guyana. Indigenous peoples interviewed expected REDD+ to be more appealing for the indigenous community, in terms of ensuring inclusiveness and equal access to participate in REDD+ and obtain benefits. Adequate support needs to be given for a communication campaign so that key messages regarding REDD+ and its implementation are clear, to avoid further confusion or different interpretations among community members.

The development of the successor Green State Development Strategy saw several subcommittees working on the seven central thematic areas. Persons involved were from all sectors, government, academia, NGOs including indigenous representatives. The final draft was completed in May 2019 – named the Green State Development Strategy: Vision 2040 (Diversified, Resilient, Low Carbon, People Centred).

Table 21. Forest carbon sampling strata

Forest Carbon sampling strata		Area (ha)
High potential for change	More accessible	3,165,731
	Less accessible	3,096,270
Medium potential for change	More accessible	960,633
	Less accessible	4,267,988
Low potential for change	More accessible	262,014
	Less accessible	5,872,574

Source: GFC 2018b

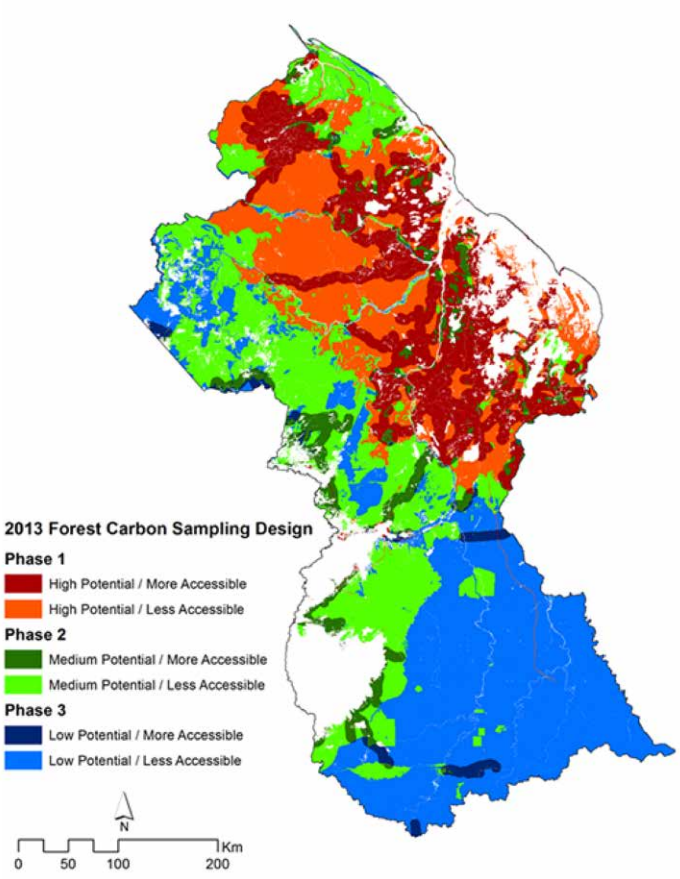

Figure 9. Forest carbon sampling design

Source: GFC 2018b

Box 4. Voices of the people – an indigenous perspective

This box offers some indigenous perspectives regarding REDD+ in Guyana, based on key informant interviews conducted in 2017.

Aiming to do no harm and to ensure equal access to REDD+ benefits, the government is in the process of establishing a benefit sharing mechanism named opt-in, targeting Guyanese Amerindians. In addition, a free prior informed consent (FPIC) procedure is being implemented on the ground, However, how to communicate these concepts well remains a challenge.

The issue of indigenous communities distrusting any projects that target their customary lands adds another layer of complication. For a long time, Guyanese Amerindians have been dealing with challenges over their customary lands. Despite the legal recognition given to their land rights, the state continues to hold ultimate control over land. Indigenous communities throughout Guyana have demanded that all outstanding land and territorial issues be resolved before any Low Carbon Development Strategy/REDD+ projects that may affect customary lands and resources proceed. Under the current arrangement, the amount of customary lands recognized by government is much smaller than ancestral claims. Thereby, a large portion of customary land remains untitled. Despite government claims that land rights and the principles of FPIC are included in the national LCDS and REDD+ programs, communities are concerned that they will not be adequately addressed, and that FPIC is restricted to titled lands only – which excludes untitled ancestral land claims. For example, a draft project document for an Amerindian Land Titling Project submitted to the Guyana REDD+ Investment Fund (GRIF) in early 2011 was not based on prior consultation and did not meet international standards and safeguards, partly due to faulty procedures set out in the Amerindian Act. No clear and fair process was established for describing which customary areas would be eligible for legal recognition by the government, or when. Communities are concerned that, if carried out improperly, land titling and demarcation could increase the potential of conflicts.

The Guyana Green State Development Strategy (GSDS) document that is the successor to the LCDS does not include recognition of indigenous communities, and does not acknowledge indigenous rights. Indigenous rights have not been included due to a lack of consultation; no prior consultation or information about the document was given to indigenous peoples, and Guyana's indigenous peoples have not been kept informed regarding how REDD will unfold following the GSDS. The required knowledge on forest and forest conservation is available within the indigenous communities; however, this is not being made use of. REDD+ is being paid lip service in Guyana.

The change in administration has caused momentum to slow down in the implementation of REDD+. Prior discussions led to expectations that money would flow into indigenous communities; these expectations have not been fulfilled. Different languages within indigenous communities negatively impact their understanding of the REDD+ program. It is therefore important to convey REDD+ in a more palatable way for indigenous communities. Making information on REDD+ more accessible via different communication streams (i.e. not limited to websites that require internet access and technology literacy), and creating forums for discussion at grassroots level, will help with the inclusion of indigenous peoples. It is equally important to remember that not all indigenous communities' representatives have the same capacity or willingness to voluntarily sensitize their neighborhoods on REDD+. While the North Rupununi District Development Board (NRDDB) is sensitizing neighboring communities, the same is not happening in other indigenous communities. Considering how to provide capacity building, identifying local champions especially youth, and creating an incentive mechanism to encourage such activity at the grassroot level, are key actions for successful sensitization.

7 3E implications for REDD+

This chapter is an overall reflection on REDD+ and its policy processes in Guyana in terms of 'the 3Es'. The 3Es are effectiveness – to what extent REDD+ has achieved carbon and non-carbon benefits; efficiency – to what extent all stakeholders got what they paid for; and equity. The last refers to "the distributional aspects of the associated costs and benefits, procedural aspects of participatory decision-making and the specific contexts that shape stakeholders' perceptions of equity" (Angelsen et al. 2009).

7.1 Effectiveness

How effectively have funds been used?

As stated in the previous chapter, Norway committed up to USD 250 million to Guyana based on Guyana's delivery of results as measured, and independently verified or assessed against REDD+ Performance Indicators and Indicators of Enabling Activities. So far, Norway has paid Guyana about USD 150 million for results relating to low deforestation and improved governance. Approximately USD 70 million has been channeled through the GRIF, administered by the World Bank (World Bank 2014; Kaieteur News 2016), and approximately USD 80 million has been allocated to cover Guyana's equity share in the Amaila Falls Hydropower Project. In May 2015, a further USD 40 million was announced (GoG 2019a). Lately, in 2019, Norway completed GYD 9.1 billion final payment to the GRIF (Stabroek News 2019b).

Norway also committed to support the forest information and monitoring system Global Forest Watch, with NOK 115 million (USD 13.7 million) for 2016–2018 (Kaieteur News 2016). USD 5.8 million has been disbursed to the Guyana Forestry Commission to assist with development of the MRVS which hitherto was financed by the GFC and the state. Indeed, the major impact REDD+ has brought to Guyana has been the opportunity to improve the country's MRVS. While acknowledging this financial contribution to improve MRVS, Laing (2015) also emphasized the need to fund other overlooked capacity gaps, including: (i) national capacity, and in particular that of the mining sector, to implement a low-carbon economy; (ii) capacity for land management, particularly in indigenous communities; and (iii) adequate civil society capacity.

Key informant interviews, however, claimed that REDD+ finance might already be directly attributable to some positive changes, especially related to the titling, demarcation and extension of Amerindian Lands. The Amerindian Land Titling Project, one of the priorities of the LCDS, was funded by the GRIF to extend existing processes in this area under the Amerindian Act of 2006. The project was designed to enable the issuance of land titles and completion of demarcation processes for all villages that submitted requests; strengthen existing mechanisms to address unresolved land issues; and improve the communication and outreach efforts of the ministry responsible for Amerindian Affairs. These actions were geared to support progress of the opt-in mechanism for communities to meaningfully participate in REDD+.

Much progress was made on most of the priority projects under the first phase of the LCDS. The Adaptation Project saw the successful completion of the Cunha Canal thereby significantly improving water management on the coast; the Amerindian Development Fund and Micro and Small Enterprise Development Fund financed several projects that enhanced social and economic development for indigenous and other vulnerable groups; the technical and institutional capacity of the GFC and other key institutions responsible

were enhanced; and the Hinterland Electrification Programme was successful in providing electricity to Amerindian homes across the country.

Despite these achievements, some analysts contend that the impact of REDD+ funding in Guyana is largely yet to be seen. As an example, in the initial years of REDD+ implementation, the mining sector – the main driver of deforestation in the country – remained relatively untouched (Laing 2014). Accordingly, this situation has caused a perception of insignificant policy changes, despite attempts at the reform of agencies such as the GGMC, and the creation of the new cross-cutting Ministry of Natural Resources.

However, a CIFOR study (Korhonen-Kurki et al. 2019) highlights Guyana as one of three countries making significant REDD+ progress at a global level. This has been supported by a combination of already-initiated policy change and strong ownership of the REDD+ process (Seymour and Busch 2016). In general, the Norway–Guyana partnership has been "effective in raising the political profile of climate change issues in Guyana" (Creed and Nakhooda 2011). Yet progress has slowed down, largely due to delays in financing, caused by the administrative hurdles of channeling funds through multilateral development banks, and disputes over the application of the World Bank's safeguard policies to revenues earned on a performance basis under the agreement (Creed and Nakhooda 2011). This slow disbursement has not only threatened to undermine political support for the partnership, but also constrained the government's ability to respond to the emergence of mining as the main cause of deforestation (Seymour and Busch 2016). Likewise, increased mining activities and the big oil find has diverted attention away from forest protection and REDD+, with minimal actual spending on REDD+ (Laing 2018).

It is too early to see the overall effect of REDD+ on the rate of deforestation in Guyana. However, it needs to be noted that since 2012, deforestation levels have progressively declined, with mining deforestation being reduced significantly. The most recent published rate of deforestation, in 2017, is 0.048% (GFC 2017a).

In 2018, Mongabay reported that Guyana recorded its lowest rate of deforestation since 2010, when the South American country first established its national MRV program. According to GFC data in 2018, the deforestation rate in 2017 was 0.048% – decreasing from the 0.050% recorded in 2015–2016. Though mining has continued to be the main driver of deforestation in Guyana, this lower deforestation rate for 2017 illustrates its decreasing impact. This indicates improvement as, initially, several reports showed that deforestation increased sharply in the years just before and during the REDD+ agreement, mainly due to increased mining in response to increased gold prices (Seymour and Busch 2016; Laing 2018). As this driver of deforestation expanded concurrently with REDD+ initiatives, measuring impacts attributable to the Guyana–Norway agreement has been difficult.

Currently, there is only the opt-in provision for indigenous communities. In the design of the opt-in mechanism, 'opting in' was the decision of individual villages: "it is voluntary, reversible, and without a deadline or consequences for other national development programs" (Overman et al. 2018). This implies that "if after FPIC, villages decide to opt in, traditional activities, including swidden farming, are permitted to continue. Emissions of village activities will be monitored, and the difference with the national reference level will be used to determine the amount of payment each year, per village. Transaction and implementation costs would be shared between government and village" (Overman et al. 2018).

At the design state of the opt-in mechanism, only a small amount of the funding received has actually been spent, most of which has been disbursed to the Micro and Small Enterprise Development Fund and the Amerindian Development Fund (ADF) (Laing 2015). A study by Laing (2018) has shown that it has not significantly led to behavioral changes. Likewise, Laing also states that "the opt-in mechanism that is fair for all indigenous communities, integrating REDD+ with the extractives industries such as mining, and keeping a focus on low-carbon development in the light of major new oil finds is still a work in progress."

The government needs to prioritize the development of measures that directly address drivers of deforestation. Despite positive indications around the country performance, as shown by the decreased deforestation rate, proposals targeting the main drivers of deforestation and forest degradation are still lacking. Without a direct mechanism that tackles the drivers of deforestation, the effectiveness of REDD+ fails to ensure its permanence.

Currently, Guyana's economy still largely depends on extractive resources, with mining the main driver of deforestation. Since mining rights supersede the Forestry Act, this condition will remain for the foreseeable future (Forest Legality Initiative n.d.). Oil exploration has the potential to bring negative impacts to the effectiveness of REDD+, albeit indirectly. Foglia from Bloomberg (2019) reported how Guyana could be pumping 1 million barrels of oil a day by 2025. Although this may not pose a menace to Guyana's rainforest, the billions of dollars in taxes and royalties flowing into the government's coffers might (Foglia 2019). When the GDP doubles, oil money could pay for power lines, better schools and improved healthcare for the 100,000 people who live inside the rainforest. But that also would require building more roads – which would make the area more accessible to logging and mining companies.

Performance-based payments – or politics?

Under the Norway–Guyana REDD+ agreement, audits have been conducted to assess progress. The 2012 audit findings showed that seven out of ten verification indicators were not, or were only partially met (Rainforest Alliance 2012; Henders and Ostwald 2013; Lang 2013). Performance improved slightly the following year, with 13 out of 16 indicators met. Only one indicator was not met (application of EITI candidacy at the 2013 board meeting), and two indicators were partially met (Norwegian Ministry of the Environment 2013).

In the 2012 assessment, successes included institutional set up of an Office of Climate Change and the Guyana Forestry Commission (GFC), with the REDD+ Secretariat, responsible for technical and operational implementation of REDD+ measures. Reports also acknowledge the strong performance of independent forest monitoring, progress in EU FLEGT, and Extractive Industries Transparency Initiatives. Guyana also enhanced intersectoral coordination on land uses, as the new Ministry of Natural Resources and the Department of Environment were established. However, stakeholders participating in our consultation workshops also reported weak consultation and irregular communication between government and local people.

According to some indigenous representatives interviewed, access to information has been a challenge to the inclusiveness of REDD+.

However, recognition is made of ongoing actions that seek to address these issues, and as government officials who were interviewed stated, Guyana is actively in its REDD+ Readiness phase inclusive of information and awareness building. Support is being provided by the FCPF through the Ministry of Natural Resources and a special Project Execution Unit has been set up. The officials asserted that several components of REDD+ Readiness were underway including "extensive strengthening and capacity building programmes with Indigenous and forest-dependent institutions and stakeholders, to ensure their readiness, involvement, inputs and active participation for an inclusive REDD+ programme". In particular regard to community engagement, one component comprises a two-year program with the National Toshaos Council and ten other Indigenous Peoples NGOs and community-based organizations (CBOs) including the National Steering Committee of Community Forestry Organisations

Slow implementation of the GRIF adds complexities. Two years after the inception of REDD+ in Guyana, in 2012, GRIF released a total of USD 9.2 million (13% of the total pledged, based on the Steering Committee's funding decisions) (Henders and Ostwald 2013; Lang 2013). While there was visible progress in certain areas, mainly technical forest monitoring and area mapping, the 2013 audit report concludes that the "dominant impression from this audit, based on inputs from all interested parties, is one of frustration and disappointment that more progress has not occurred" (Norwegian Ministry of the Environment 2013, p. 5). Despite rejecting indicator verification (Lang 2013; Laing 2018), the Norwegian government continued its support by allocating additional funds of USD 45 million to Guyana, based on "continued low deforestation", "improvements in forest governance", and "commitment to further improvements in 2013" (Ministry of the Environment 2012), with the acknowledgment that Guyana provides a valuable carbon storage service to the world, and can be a model to other countries with high forest cover and low deforestation rates (Lang 2013). Guyana continued to receive disbursements with the "final payment" under the bilateral agreement issued by Norway in September 2019 when Minister for Climate and Environment Ola Elvestuen was quoted as having emphasized that "Norway is most impressed with the continued low deforestation rates in Guyana over many years, and also with

the substantive progress made on forest governance" (GRIF 2019, p. 1).

If funding disbursement or provision of additional funding is a measurement for performance, the experience of Guyana shows otherwise.

What is progress?

Guyana has made significant progress in the implementation of REDD+ and its overall green development agenda. Yet, even the notion of progress itself has been questioned, with NGOs and auditors having very different perspectives. Over 5 years ago, some authors said they had not seen progress in the way that it was outlined in the original MoU, thus leading them to question whether actual results justified further payments under a performance-based agreement (Henders and Ostwald 2013). Indeed, as a CIFOR study highlighted, one major gap in the current guidance for REDD+ finance is a lack of clear, context-relevant criteria and metrics to help justify and mobilize payments (Wong et al. 2016).

Often the way indicators are worded can lead to different assessment results, as shown by the audit reports (Norwegian Ministry of the Environment 2013), and the different assessments of the 2012 audit and the 2013 verification report. REDD+ is also an overarching umbrella term, encompassing aspects of technical monitoring, REDD+ policy, and programmatic implementation, all directed towards supporting continued low rates of deforestation and forest degradation, conservation and sustainable management. Due to the diversity of these included aspects, they are assessed in different manners.

Nevertheless, there is general agreement among stakeholders interviewed that progress has been made in numerous areas:

1. **REDD+ reporting (MRVS)** – Phase 1 of the MRVS has been completed and Phase 2 of the MRVS is currently being implemented. This second phase will implement MRV reporting from 2015 to 2020, and is Guyana's largest national forest cover monitoring program. The sixth annual assessment under the MRVS has been completed, concluding the lowest rate of deforestation since 2010 – 0.05%. Recent updates from 2017 also point to a similarly low level of deforestation at 0.048%. Under the REDD+ program, Guyana has submitted and completed a successful review of its national position for a **Reference Level** for REDD+ in keeping with international guidance, decisions and best practice. **Independent forest monitoring** – the GFC, with support from Norway, has continued its national-level assessment program of forest legality in Guyana; assessments for 2016 and 2017 have been completed and made public (SAC 2018), while the draft 2019 assessment report is currently accessible for public review.
2. **REDD+ governance (EU FLEGT)** – a key activity under the REDD+ Enabling Indicators (under REDD+ Governance) has been EU FLEGT. The Government of Guyana and the European Union initialled the EU FLEGT VPA in December 2019. This should set the stage for the first license under the VPA to be issued, approximately 3–4 years following this.
3. **EITI** – Guyana has applied for EITI candidacy. The first annual report was submitted to the international secretariat in April 2019 and reports on the fiscal year of 2017 as part of the country's compliance responsibilities.
4. **REDD+ supporting legislation (Forest Regulations)** – the Forest Regulations were gazetted in 2018. The Regulations support the implementation of continued low rates of deforestation and forest degradation, by providing the necessary platform for implementation of the recently updated forest laws.
5. **REDD+ supporting policy (National Forest Policy)** – the National Forest Plan and Policy were formally approved in May 2018. These form key aspects of the Natural Resources sector, whereby the revised Forest Plan and Policy embrace REDD+ and its developments and impacts in an integrated manner.
6. **REDD+ supporting guidance (Codes of Practice for the Forest Sector)** – the revised Code of Practice for Timber Harvesting was gazetted in 2018. This supports the implementation of continued low rates of deforestation and forest degradation and is a key element of REDD+.
7. **REDD+ national strategic platform (Green State Development Strategy)** – this framework document has been completed and is available to the public. Public consultations are being designed to inform the full strategy document and its implementation. This process is being guided by the United Nations Environment Programme (UNEP). Economic analysis to inform the growth trajectory has already been advanced by the Ministry of Finance.

8. **Forest Carbon Partnership Facility (FCPF)** – this project is at the mid-way point in implementation, with several significant steps taken to advance REDD+ readiness. So far, work is underway for developing the REDD+ strategy, stakeholder engagement and building REDD+ institutional capacities.
9. **REDD+ international commitments** – Guyana has made commitments under the Paris Agreement and the NDC, on emissions management and reduction in the forestry, mining and energy sectors:
   - Reduced impact logging, EU FLEGT, MRVS, degradation monitoring and Protected Areas management. The Protected Areas Commission, working with partners, has begun to explore the identification of the additional 2 million ha of Guyana's land mass that would be added to the Protected Areas of Guyana. This would increase the total Protected Areas to 17% of Guyana's land mass.
   - Addressing key areas in mining, such as reclamation of mined-out areas, reducing the use of mercury, improving the mineral maps, expanding the use of more efficient recovery techniques in the mining sector and ensuring greater compliance with environmental and safety regulations and guidelines.
   - Expanding generation of clean, renewable energy.
10. **Forest Land Allocation** – there has been a national review of forest areas allocated as forest concessions and some underutilized concessions have been repossessed. A national forest inventory commenced in 2018 and is expected to last for 3–4 years (Guyana Chronicle 2019).

On the other hand, several challenges persist:

- Like many other countries, Guyana relies almost solely on reducing deforestation directly through more stringent legislation and enforcement of existing regulations (Laing 2018). This approach requires additional efforts to change the capacity for alternative livelihood options and adequate human and fiscal resources for monitoring and enforcement.
- Overlapping and conflicting land uses, especially between forestry and mining, remain a persistent issue requiring a systematic and coordinated approach between the GGMC and GFC, and miners and loggers, respectively. Making optimum use of trees is strongly recommended, before forested areas are cleared to accommodate mining operations. This would be enhanced through greater collaboration between the respective agencies (GGMC and GFC in particular), and cooperation between the miners and loggers.
- In the mining sector, the management of mineral mining, especially for gold, still needs upgrading and strengthening in almost every sphere of activity. Monitoring and enforcement have seen some improvement, including recent actions to address cave-ins and accidents which have claimed the lives of some miners and jeopardized the livelihood of their dependents. However, there is a need for greater attention to avoid and/or mitigate pollution of waterways, reduction and safe use of mercury, and compliance with the health and safety protocols for all persons associated with this activity.

Is the Low Carbon/Green Development Strategy the right framework to include REDD+?

In general, REDD+ implementation reflects a variety of policies, programs and interventions that include enabling measures, disincentives and incentives (Angelsen et al. 2018). While the importance of tenure and rights remains, new ideas have come to the fore, including the need to engage the private sector and to situate REDD+ within broader jurisdictional approaches to low-emission rural development (Angelsen et al. 2018). In the case of Guyana, REDD+ was positioned as part of its LCDS (Thomas 2016). Indeed, one of the major initiatives for the LCDS was establishing a Memorandum of Understanding (MoU) between the Governments of Guyana and Norway through which Norway provided performance-based payments to Guyana for avoided deforestation. Thus, the flow of financial support from Norway for results achieved by Guyana through REDD+ was to be used entirely to support activities and investments within the framework of the LCDS (Office of Climate Change and Office of the President 2010).

Birdsall and Busch (2014) conducted in-country interviews and research, and reported that Guyana's performance-based payment system has functioned as designed with payments lower in years when deforestation emissions are higher, consistent with a credible contingent payment system; while Laing (2018) claimed that the LCDS lacked a direct

mechanism through which finance received from Norway would impact deforestation. In fact, the specific actions undertaken by the GFC to review, upgrade and enforce its regulations and other prescriptions, including increasing its human and technical capacity, counter this assertion as they are strategic actions focused directly on deforestation. The Commission's establishment and continued improvement of a robust MRVS that spatially accounts for the area of deforestation and degradation with confidence, and that is independently verified is a significant mechanism in this regard. This MRVS is in its second phase following the MRVS Road Map proposed in 2009, and benefits from continuous improvements to improve accuracy (GFC 2017a), but which was already deemed an "excellent national system for monitoring deforestation" assessed at a reference level relative to a high-forest/low-deforestation (HFLD) country (Birdsall and Busch 2014).

The question is more, to what extent the MRVS should be integrated into the GSDS, and to what extent it should monitor overall development.

The LCDS included two critical components for achieving effectiveness and equity: (i) the development of a national Monitoring, Reporting, and Verification System (MRVS), and (ii) multi-stakeholder participation – in particular that of indigenous forest-dependent communities – in its design and implementation of REDD+ (Bellfield et al. 2015).

The GSDS acknowledges the "solid results" the GFC has delivered though the MRVS and the expansion of this expertise into the EU FLEGT to reduce illegal logging (EU FLEGT 2018a). Further, the Strategy and Vision states the CMRV of indigenous communities would be strengthened, but does not elaborate on how this would be accomplished. Moreover, the GSDS does not appear to present any provisions for the national MRVS or of what specific mechanisms would be deployed to directly target deforestation.

As mentioned, the LCDS was, at least partly, funded by the performance payments of different REDD+ agreements. Yet LCDS and the subsequent GSDS are more an economic development plan (Laing 2015), and their specific plans to directly reduce the pressure on forests are generally unclear. As in many other countries, the integration of climate change aspects into wider development frameworks occurs more through projects run outside the government (GoG 2006). Thomas (2009) and current trends highlight the growing importance of mining in Guyana's economy. Reports, including Guyana's EITI report underscore the need for further study and data on the industry to improve its performance, both economically and environmentally, as well as to strengthen its alignment with the GSDS. As such, focus on reducing emissions from deforestation and forest degradation is generally diluted in the overall Strategy and its implementing mechanisms.

7.2 Efficiency

The LCDS sought to assign an economic cost to ecological services provided by Guyana's rainforests to the world. This economic value to the world (EVW) was estimated at USD 40 billion per year. However, the economic value of the forests to the nation (EVN) was estimated at a much lower value of USD 580 million per year, representing the income Guyana would gain if the natural resources in its forests were exploited. Through this premise, Guyana committed to conserving its forests on the condition that the international community funded this initiative at a monetary value higher than the EVN (Gregersen et al. 2010).

Guyana's MRVS is the most advanced system of its kind in the world. During its early phases, the REDD+ Readiness stage moved fast. Such progress was contributed to by two tiers of inter-agency coordination and a multi-stakeholder participation system, with the President of Guyana holding a major role in convening and chairing the Multi-Stakeholder Steering Committee, and GFC convening and chairing the MRVS Steering Committee. Both committees had strong links with the Ministry of Natural Resources in their efforts to understand how the drivers of deforestation and forest degradation could be more efficiently managed to reduce emissions (Office of the President 2011).

The complexity of the institutional structure through which REDD+ finance flowed has led to slow REDD+ financial flow and expenditure, which in turn has constrained REDD+ implementation. Such complexity was in part created to satisfy the myriad of safeguards and prerequisites, due to limited capacity within the Government of Guyana (Stabroek News 2011;

Office of Climate Change 2013; Laing 2018). Slow financial delivery has likewise meant increasing administrative costs payable to intermediary entities (Laing 2014), and thereby resulting in reduced payments received by Guyana in return for its performance – essentially less than it had earned by its performance.

Generally, the slow delivery of finance has resulted in extremely slow progress in projects, particularly those most practical to indigenous communities. The land titling program finally began in 2013, following the Amerindian Development Fund, which began in 2012. The opt-in program was delayed due to concerns over land rights issues and consultation processes with indigenous communities (Anselmo and Almas 2017).

The complexities and attendant project delays with receipt of Norway's disbursements could be directed at the misconception primarily by the intermediary agencies (World Bank and IDB) that the Guyana and Norway MoU was premised on overseas direct aid (ODA) which these agencies are more familiar with, rather than recognizing that it was a payment for ecosystem services (PES) agreement. While some of these challenges were understandable given that there was no precedent to follow for this landmark agreement, the fact that they persisted and were not rectified or resolved, contributed to further delays and indeed some levels of frustration felt by the targeted beneficiaries of the predetermined project activities for which the funds were to be directed. Birdsall and Busch (2014) asserted that these scenarios may have eclipsed the potential contribution to broader policy and program ideas for tackling deforestation.

Guyana has invested significant sums of its own funds to establish the necessary structures and processes to implement its MRVS and associated actions that supported the LCDS and the Guyana–Norway Agreement. The GFC has become the lead agency undertaking significant responsibilities outside its own mandate and extra-budgetary expenses. These expenses borne by the Commission to ensure successful implementation of mechanisms that monitor, verify and report on Guyana's performance should be quantified and assessed against what was earned by the country by the payments. Indeed, the overall cost to Guyana for all the activities to meet the requirements of the bilateral agreement with Norway, should be compared against what was earned through the performance-based payments. The value of improved technical and institutional capacities should also be considered. Overall, this would present a more accurate position on the efficacy and other parameters of this agreement designed to represent a model for other HFLD countries to emulate.

7.3 Equity

Guyana's recognition of indigenous rights is much advanced compared with many other countries. Over 3 million ha (approximately 14%) of the country's land mass is held by the indigenous peoples under ownership rights, while an additional 500,000 ha are allocated from the State Forest for Community Forestry Associations. In the context of REDD+, the indigenous peoples hold similar membership rights with representatives of other stakeholder groups on the Multi-Stakeholder Steering Committee, EU FLEGT National Implementation Working Group, FCPF REDD Readiness project and other fora. Specific actions also target the indigenous population in particular, such as the Grievance and Redress Mechanism, country-wide consultations and the Opt-In Mechanism (OIM). Further, the CMRV, introduced by Global Canopy Programme, the Iwokrama International Centre and the North Rupununi District Development Board in collaboration with the GFC trained 40 community representatives from 16 communities as CMRV technicians and managers for data collection, verification and dissemination. Out of the 16, Annai was designated at a national demonstration site by the GFC while other areas were designated for mining and forestry. Since the end of this initiative, and with the expertise of the trained personnel, the World Wildlife Fund (WWF) Guyana has rolled out two CMRV programs that empower villages and communities to use and manage forests for greater equity and benefit sharing.

The OIM was developed in consultation with indigenous leaders nationwide who provided reviews to inform the documents, and the community of Muritaro was assigned to be the national pilot site. However, the Mechanism is not yet finalized and the structure is still under development; payment is being navigated toward two options – direct payments to communities or indirect payments through the Amerindian Development Fund (Bellfield et al. 2015).

There are four challenges hindering progress of the opt-in mechanism as identified by various authors:

1. The size of area included for opt-in is much smaller if titled under community land, compared with ancestral land claims (Read et al. 2010; SCPDA 2012; Dooley and Griffiths 2014). This may have contributed to an increasing number of requests for extensions to village boundaries, which, when added to the current areas listed for review and demarcation contributes to even further delay.
2. As Chapter 3 highlights, multiple land uses and rights and the inadequacy of adequate consultations might impede the effectiveness of REDD+. Guyana exemplifies the range of property rights described by Bromley (1991). Concessionaires have *de jure* rights in a number of areas – such as the right to extract. Other users, such as miners, may have competing *de jure* rights along with *de facto* rights in some areas. Amerindian communities have *de jure* rights to titled lands – predominantly outside the State Forest Estate – but there are many communities which exercise *de facto* rights over other areas and claim *de jure* rights through titling and extension processes. This complication of rights, especially between timber and mining interests, has led to instances of conflict and environmental damage which attract the attention of the regulatory agencies for resolution. Understanding the impact that the LCDS has had, and what the GSDS could have, on these rights to the forest would be crucial in assessing REDD+ effectiveness in Guyana.
3. The limited coordination between ministries has caused overlap (fully or partially) of indigenous communities' titles with extractive permits, which would remain valid under the 2006 Amerindian Act (Dooley and Griffiths 2014).
4. While there is annual conference between government and the National Toshaos Council which comprises the village leaders of all indigenous communities across the country, during which all matters, including REDD+ are discussed, there is some misunderstanding among some community members whether REDD+ earnings are to replace national funding for basic rural development for communities. Bovolo et al. (2012) raised the importance of having separate allocations to increase resilience against climate change, especially with changing weather patterns affecting communities' primary food source (farming) and drinking water supply in the southern part of Guyana, where it rains less than in other parts of the country.
5. Additionally, the FPIC process will need a much larger and continuous dissemination and engagement effort to make REDD+ more understandable.

Lastly, representatives of other forest-dependent communities and indeed some coastal residents have expressed concern that there appears to be a strong bias towards the indigenous communities as beneficiaries of the OIM, and perceptions (founded or unfounded) of a lack of equity in benefit sharing with other communities and/or groups. These conceptions, notwithstanding the added complexities of the coastal versus hinterland vs rural vs city residents, land ownership and uses must be ventilated at the level of government and with all stakeholder groups to ensure equity issues are wholesomely addressed.

However, it is anticipated that the Guyana FCPF REDD+ project is currently addressing some of these issues for which it was designed. The experience and support of the indigenous NGOs and others such as UNEP, Conservation International, WWF, Iwokrama and others should be sought to assist in this process, which should not be seen as a project activity, but continuous capacity and awareness-building actions.

8 Conclusions

Guyana, being a country of high forest cover and low deforestation is in a special position to contemplate the pursuit of REDD+ for the social and economic advancement of its relatively small population. In 2009, Norway agreed to support Guyana to maintain the low levels of deforestation over a five-year period, with REDD+ implemented through the LCDS developed by the then government. The LCDS put an economic value on the forest and the opportunity cost of forgone development of its vast natural resources. This has allowed the country to achieve significant progress in addressing illegal logging, established a robust MRVS and increased land ownership for its indigenous peoples – which by extension, adds to the areas under some form of conservation actions. An innovative benefit sharing concept – the 'Opt-in' Mechanism – is also on the way; this is unique to Guyana, when compared with other REDD+ countries and is designed to ensure equitable sharing of REDD+ benefits, but which could easily be adapted to other concepts.

Yet, the early progress in REDD+ slowed down in later years. Increased mining activities (if gold prices are high) and commercial oil discoveries may divert attention away from forest protection and REDD+, with minimal actual spending on REDD+. Within the LCDS, REDD+ was taken to be almost synonymous with LCDS. When LCDS transformed into the GSDS, the position of REDD+ was less clear.

Questions have been raised as to whether payments are truly made for performance, as there have not been any measures taken to address direct drivers of deforestation, or whether it was instead political correctness, construed to build a certain image of REDD+ in the global eye. At the country level, Guyanese wondered whether the traditional mining and forestry sectors, identified as the main drivers of deforestation, would be closed, putting thousands out of work, and how they would be compensated to maintain and improve their livelihoods. There is an ongoing consultation process and communication strategy to engage and inform stakeholders.

Guyana has succeeded in earning the performance-based payments based on the sliding scale formula agreed to by both parties and has fulfilled all the requirements of the agreement signed with Norway. Guyana succeeded in earning the performance-based payments based on the sliding scale formula agreed to by both parties. Norway succeeded in ensuring the deforestation rates remained low and had the added bonus ensuring Guyana signed on to the EITI and EU FLEGT initiatives for greater scrutiny and compliance with international standards. Unfortunately, the flagship project in the agreement, particularly the Amaila Falls Hydropower project, designed to significantly reduce Guyana's heavy dependence on imported fossil fuels and to transform energy production to a renewable resource, was truncated, and is to be replaced by a mix of smaller renewable projects at various locations, with what may still have much less overall impact. However, the other projects in the agreement are at various stages of progress, with the GRIF serving as the repository, and a model of how funds derived through REDD+ and other special 'projects', could be managed appropriately (once all the kinks are ironed out). Water management is significantly improved by the Cunha Canal Rehabilitation Project, thereby protecting thousands of hectares of agriculture lands, many community-based REDD+ projects were successfully implemented, and the land titling process, though significantly delayed, is securing traditional rights and ownership of indigenous lands, and indeed valuable biodiversity and ecosystems in the process.

This study has confirmed the enduring value of meaningful consultation and engagement

of all stakeholders, of FPIC, of transparency and information sharing, and of the benefits of capacity and awareness building. The 3Es analysis of effectiveness, efficiency and equity presented a good picture of Guyana's REDD+ initiative, and of its overall performance in the interest of the parties involved. Some challenges remain. Engagement with indigenous communities is still perceived as inadequate by some representatives interviewed. However, there is recognition of plans to address this issue.

Further, while indigenous rights, particularly related to land titling needs to be improved, overlapping and conflicting land uses, especially between forestry and mining, need to be resolved for the long term. While indigenous rights need to be strengthened, overlapping and conflicting land uses, especially between forestry and mining, need to be resolved.

It is also too early to see the impact of all REDD+ activities on the rates of deforestation, particularly when Guyana's economy still largely depends on extractive resources, with mining remaining the main driver of deforestation. The potential revenue anticipated from oil drilling might change Guyana's landscape and outlook, putting the permanence of REDD+ under further scrutiny. On one hand, the increased revenue may release pressure from the forest as entrepreneurial activity could shift from the traditional extractive industries to the oil and gas sector, and on the other, there are concerns that it may lead to increased deforestation due to perceptions of less oversight by the regulators.

However, the consensus of all the participants in this study, is for the country to retain its historically low deforestation rates and, in parallel with improved monitoring and enforcement by the regulatory agencies, to continue the development of its natural resources for the socio-economic betterment of all Guyanese including coming generations. Openness to a renewed agreement with Norway remains at a high level and the constant threat of worsening climate change is a constant reminder of the importance of retaining valuable tropical forests such as Guyana's.

The assessment process of this study has also revealed that the risk of business-as-usual was not only confined to the manner in which extractive industries could be conducted, but even also to the way in which multilateral agencies perceived their roles and responsibilities, and of how service agreements were still being treated as international development finance arrangements. These matters provide good examples of what could occur and the pitfalls to be avoided.

The landmark Norway-Guyana Agreement, therefore, presents many lessons learned for other HFLD countries which seek to continue their development paths without jeopardizing national patrimony or development plans. The issues and experiences faced by the parties underscores that REDD+ agreements such as the one shared by Guyana and Norway cannot be viewed through the prism of development aid, but rather be recognized as service agreements which require different management modalities.

Guyana's boldness in undertaking an international REDD+ initiative should not only be recognized for improving forest management and earning payments for these efforts that in turn finance national development plans whilst contributing to the global climate fight, but also for providing a valuable example for other HFLD countries to emulate. It also underscores the merit and importance for meaningful involvement of all stakeholders in the process.

Guyana's REDD+ profile while still being refined is very laudable.

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Guyana is a small country with 87.5% of its area covered with forest (GFC 2018b) and lies in the center of the Guiana Shield, one of the four largest remaining standing tropical rainforests in the world. In 2006, Guyana took advantage of the recognition of the value of standing forest to mitigate climate change and became actively engaged in REDD+. Subsequently, in 2009, a Memorandum of Understanding was signed with Norway to support implementation of a Low Carbon Development Strategy (LCDS). This was a national plan to reorient Guyana's economy and move towards more sustainable extractive industries and forest management. The bilateral agreement with Norway established a framework for performance-related finance of up to USD 250 million from 2010 to 2015 for implementation of the LCDS. Three main pillars of the LCDS, linked to its REDD+ agenda, included maintaining historically low deforestation, endorsing low carbon development and adapting to climate change (Bellfield et al. 2015).

More recently, and building on the LCDS, a new Green State Development Strategy: Vision 2040 has been developed for Guyana as a "twenty-year, national development policy that reflects the guiding vision and principles of the 'green agenda'. The central objective is development that provides a better quality of life for all Guyanese derived from the country's natural wealth – its diversity of people and abundant natural resources (land, water, forests, mineral and aggregates, biodiversity)" (GoG 2019b, p. 1).

Since 2009, CIFOR has conducted the Global Comparative Study (GCS) in 13 countries, with Guyana as the final addition. Among the GCS-REDD+ case studies, Guyana is one of the most advanced REDD+ countries, alongside Brazil (Korhonen-Kurki et al. 2019), and the Norway–Guyana bilateral agreement is the world's second largest national-level REDD+ scheme (Bade 2013). Yet, Guyana's economy still largely depends on extractive resources, with mining remaining the main driver of deforestation and forest degradation. The potential revenue anticipated from offshore oil extraction might change the country's landscape and outlook, putting the permanence of REDD+ under scrutiny. The Guyana case study, therefore, presents many lessons on how to balance development paths without jeopardizing national forest resources.

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This research was carried out by CIFOR as part of the CGIAR Research Program on Forests, Trees and Agroforestry (FTA). FTA is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with Bioversity International, CATIE, CIRAD, INBAR, ICRAF and TBI.

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