

**A LOW-CARBON
DEVELOPMENT
STRATEGY**

Transforming Guyana's Economy While Combating Climate Change

May 2010 | Office of the President,
Republic of Guyana

Introduction and Background

This document is the third draft of Guyana's Low Carbon Development Strategy (LCDS). It reflects the outcome of almost a year of review and consultation within Guyana, coupled with input from climate change negotiations at the United Nations, and other international climate change initiatives. The document sets out Guyana's strategy to forge a new low-carbon economy over the coming decade. It identifies the eight priorities that will be the initial focus of LCDS implementation in 2010 and 2011, gives an outline of the priorities for the period 2012-2015, and sets out the framework for further consultation and strategy development on Guyana's long-term low-carbon development.

The first draft of the document was published in June 2009, and was built on a vision previously set out by President Bharrat Jagdeo, who said *"...we want to be part of a global coalition that stimulates innovation and creativity to enable us to leapfrog over the high-carbon development path that today's business-as-usual trajectory suggests we must follow... As part of our commitment, I believe that the people of this country might be willing to deploy almost our entire rainforest – which is larger than England – in the service of the world's battle against climate change... providing this does not damage their legitimate development aspirations or impact on their sovereignty over our forest."*

The first draft of the LCDS set out an initial view on how this might be done, and outlined insights on how to stimulate the creation of a low-deforestation, low-carbon, climate-resilient economy in Guyana. After publication of the first draft:

- The draft LCDS was the subject of a four month national multi-stakeholder consultation, where over 10% of the country's population participated directly in information sharing and consultation sessions on the strategy; extensive public outreach and discussion took place in the national and local media; the consultation process and a review of the draft were overseen by a nationally representative steering committee; and the process was monitored by a respected international non-governmental organization.
- Guyana continued to work with other Parties to the United Nations Framework Convention on Climate Change (UNFCCC) to support the establishment of a global Reduced Emissions from Deforestation and Degradation (REDD+) mechanism.
- Guyana joined 34 other countries in the Informal Working Group on Interim Financing for REDD+ (IWG-IFR). This group was set up to take forward the decisions reached at the G20 side meeting on deforestation that took place in London in April, 2009, where Guyana was one of three non-G20 countries invited to join the leaders of the most powerful economies in the world. The group has now made proposals on how to achieve a 25% reduction in global deforestation rates by 2015 at a cost of between €15 and €25 billion.
- On November 9th, 2009, the Governments of Guyana and Norway signed a Memorandum of Understanding which set out how the two countries will "work together to provide the world with a relevant, replicable model for how REDD+ can align the development objectives of forest countries with the world's need to combat climate change." Norway committed to providing financial support of up to US\$250 million by 2015 for results achieved by Guyana in limiting emissions from deforestation and forest degradation.

The second draft of the LCDS was published in December 2009, and updated the first draft in line with progress made during the above processes. It also outlined a set of conditions, which if met, might provide the basis for Guyana to participate in REDD+ and place almost its entire forest under long-term protection. A key condition was that the Copenhagen Conference of the Parties to the UNFCCC would establish a long-term framework for REDD+. Contrary to what had been hoped by many of the Parties, the Conference failed to do this.

This version of the LCDS incorporates further feedback from national stakeholders and input based on the outcomes of the Copenhagen Conference and other international processes. Given the continued absence of a UNFCCC REDD+ mechanism, the strategy outlines the conditions under which Guyana might participate in REDD+ for an Interim Period (2010 – 2015).



Transforming Guyana's economy while combating climate change

Contents

Foreword by Bharrat Jagdeo, President of the Republic of Guyana	5
Executive Summary	7
A Low-Carbon Economic Development Strategy for Guyana	11
Deploying Guyana's Forests in the Battle Against Climate Change	18
Creating a Low-Carbon Economy	26
Creating Opportunities for Amerindian Communities	34
Protecting Guyana's People and Productive Land	37
Implementing Guyana's Low Carbon Development Plan	39
Ensuring Support from Stakeholders	42
Towards participating in REDD+: Framing the Choice	44
Starting to Forge a New Economy: Interim REDD+ (2010-2015)	50
Appendices	62

Foreword

Six months ago, I joined Heads of Government from across the world in Copenhagen, Denmark. Like many others, I carried with me with the hopes of my people that representatives of almost two hundred countries would use the meeting in Copenhagen to make the tough decisions necessary to avert catastrophic climate change.

Some progress was made. But not enough – and the world is running out of time. Average global temperatures are still rising too fast and our planet is on a trajectory towards human catastrophe of a scale never seen before. The annual global greenhouse gas emissions that are causing these temperature rises must peak by 2020 at the latest, and be cut by at least 80 percent by 2050.

The task after Copenhagen is the same as the task before Copenhagen. It is not just about defining the climate change problem – or even about campaigning for action. The task is about forging workable solutions – by catalysing gains in energy efficiency, stimulating a rapid global transition to clean energy, and supporting reductions in agriculture- and forest-based emissions.

There is no solution to climate change without action on forestry. We must continue to seek a global REDD+ mechanism to achieve the needed long term reduction in emissions from deforestation and forest degradation – which comprise about a fifth of the global total.

The people of Guyana identified the urgency of this action several years ago. As a country where almost 80% of our territory is rainforest, we didn't want to just despair about climate change – we wanted do something about it. And we wanted to break the false debate which suggests that a nation must choose between national development and combating climate change.

So three years ago, we proposed two ideas. One – we said we might be prepared to put virtually our entire rainforest, which is about the size of England – under long term protection if the right economic incentives were created. And two – we said we would use the payments we receive for our forests' climate services to re-orient our economy onto a low carbon, environmentally sound trajectory. This strategy sets out the conditions under which we might be able to implement these ideas. And if we are successful, we hope that we will be able to offer the world a working example of what it takes to forge a low deforestation, low carbon, climate resilient economy.

The strategy is the result of one of the most comprehensive national conversations on forest protection and climate change that has taken place anywhere in the world. The people of Guyana have shown that they are willing to play their part.

Our Amerindians continue to play a particularly vital role. They have protected our forests for generations, a sizeable component of forest land is under their jurisdiction, and their insights are valuable not only for their own communities, but for the rest of Guyana and the wider world.

Similarly, elected representatives from all political parties remain critical to long-term success. Despite our other differences, successive Guyanese governments of different parties have long provided strong leadership to the world on the need to protect our forests. Members of Parliament and all other sectors of our society continue to make extremely valuable contributions.

The consultations made it clear that the people of Guyana want to reconcile our national development with global needs for forests such as ours to be protected. But this support is not un-qualified, and especially after the set-backs experienced in Copenhagen, it is still impossible

to tell if the international community is ready to do what it takes to live up to their side of the bargain.

Nonetheless, the world urgently needs examples of how progressive partnerships can prove that solutions are possible. In Guyana, we have been pleased to work with Norway to catalyse the start of such a partnership – and our countries are breaking new ground in the search for solutions. Norway has stated its intention to provide a quarter of a billion dollars to 2015 to pay for our forests' climate services – and we have identified the investments we will make with these payments.

I look forward to expanding our partnership to include others, and I am confident that this will enable the people of Guyana to commit to the long-term protection of our forest. This in turn will provide the world with highly cost-effective climate solutions that are of benefit to all. Towards this goal, we are also pleased to have made significant input into forging the Interim REDD+ Partnership with more than 30 other countries, and believe that the replication of our model can help reduce global deforestation and forest degradation by 25% by 2015 for less than €25 billion in total. We will continue to play our part in helping to make the Interim REDD+ Partnership a reality for ourselves and other countries.

Therefore, the elements needed to start forging new economies are being identified – but it will require international resolve to make them a reality.

Some have said that it is unfortunate that we are trying to do this after a period when the financial crisis ravaged economies across the world, leaving many countries indebted and in recession. I disagree. The past two years have shown what the international community can do when its interests are in danger. Trillions of dollars were mobilized to rescue banks and protect the economies of the developed world. Long-established conventions were torn up to rescue entire countries. Governments in the developed world invested heavily to save jobs, citizens' homes and individual companies. These years have therefore shown that when the world wants to act, the world is able to act. Our planet and the livelihoods of its six billion people call for a similar resolve

We didn't see this resolve in Copenhagen, but that does not change the fundamental truth that if we are to face down climate change, the world needs ambition that is commensurate with the challenge we face.

If the international community acts in a progressive fashion, listens to forest countries and their people, and applies the same resolve it applied to the financial crisis to achieve a sufficiently ambitious international climate agreement, Guyana will not be found lacking. We are willing to take the tough actions needed to improve our forest-based economic sectors where necessary. We are ready to create real economic alternatives to remove long-term pressure from our forests. We have started to move our economy onto a low carbon trajectory. What we are looking for from the international community is the partnership that enables us to go forward together.

Bharrat Jagdeo

President of the Republic of Guyana

Executive summary

Guyana is reaching a new stage in its national development. Over the past two decades, the country has re-established a market-led economy within a multi-party democratic system. The economy has been restructured to support progressively increasing levels of social sector and infrastructural investment alongside private sector-driven economic growth. As this first generation of reforms and infrastructural development nears completion, the Government is embarking on a new wave of reforms, coupled with further expansion of the country's strategic economic infrastructure. These aim to further stimulate investment, economic growth and job creation as well as to improve security and social services, protect vulnerable sections of society, and deal with increased climate change-induced flooding. Harnessing the nation's assets to continue to develop the economy and fund these and other social and economic needs must be the Government's top priority.

Guyana's pristine forests are its most valuable natural asset – the majority of the 15 million hectare rainforest is suitable for timber extraction and post-harvest agriculture, and significant mineral deposits exist below its surface. The value of the State Forest Estate - known as Economic Value to the Nation or EVN - is estimated to be the equivalent of an annual annuity payment of US\$580 million.

However, generating this EVN, while economically rational for Guyana, would have significant negative consequences for the world. The deforestation that would accompany this development path would reduce the critical environmental services that Guyana's forests provide to the world – such as bio-diversity, water regulation and carbon sequestration. Conservative valuations of the Economic Value to the World (EVW) provided by Guyana's forests suggest that, left standing, they can contribute US\$40 billion to the global economy each year.

However, no trading markets exist for these environmental services – and as a consequence, individuals and companies in rainforest countries face powerful incentives to deforest. In turn, national and local governments face political pressure to use the forest for economic and employment benefit. Reconciling this tension between protecting rainforests and pursuing economically rational development is the core challenge that must be addressed to make forests worth more alive than dead.

It is now over three years since the President of Guyana first proposed that the people of Guyana might be willing to address this challenge by placing almost the entirety of Guyana's forest under long term protection, providing the people's sovereignty over the forest was not affected, and that their legitimate development aspirations were protected.

Since then, there has been increasing global recognition of the fact that protecting forests is essential to the fight against climate change – deforestation and forest degradation contribute about 17% of global greenhouse gas emissions. As a consequence, the conditions under which long-term forest protection might align Guyana's interests with global needs to combat climate change have become clearer. If a properly designed and resourced Reduced Emissions from Deforestation and Degradation (REDD+) mechanism is agreed by the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), Guyana will be able to decide whether to place its forest under long-term protection by establishing a voluntary cap on forest-based greenhouse gas emissions.

This would frame new economic choices for Guyana. It would make forest protection an economically rational choice by placing a value on Guyana's forest (EVN_{REDD+}) which is in excess of EVN . Integrated land use decisions would factor in the EVN_{REDD+} opportunity cost, and this can change today's economic paradigm to make Guyana's forests worth more alive than dead.

If this happens, Guyana will be able to invest in creating a low deforestation, low carbon, climate resilient economy where:

- Guyana can avoid cumulative forest-based emissions of 1.5 gigatons of CO_2e (carbon dioxide equivalent which includes other greenhouse gases) by 2020 that would have been produced by an otherwise economically rational development path.
- REDD+ payments can enable Guyana's economy to be realigned onto a low-carbon development trajectory. Guyana can generate economic growth at or in excess of projected Latin American growth rates over the coming decade, while simultaneously eliminating approximately 30 percent of non-forestry emissions through the use of clean energy. To achieve this, Guyana must:
 - Invest in strategic low carbon economic infrastructure, such as: a hydro-electricity plant at Amaila Falls; improved access to arable, non-forested land; and improved fibre optic bandwidth to facilitate the development of low-carbon business activities.
 - Nurture investment in high-potential low-carbon sectors, such as fruits and vegetables, aquaculture, business process outsourcing and ecotourism.
 - Reform existing forest-dependent sectors, including forestry and mining, where necessary, so that these sectors can operate at the standards necessary to sustainably protect Guyana's forest.
 - Expand access to services, and create new economic opportunities for Amerindian communities through improved social services (including health and education), low-carbon energy sources, clean water and employment which does not threaten the forest.
 - Improve services to the broader Guyana citizenry, including improving and expanding job prospects, promoting private sector entrepreneurship, and improving social services with a particular focus on health and education.
- Guyana's people and productive land can be protected from changing weather patterns. Investments in priority climate adaptation infrastructure can reduce the 10 percent of current GDP which is estimated to be lost each year as a result of flooding.

The first draft of the strategy formed the basis for a four-month consultative process involving national stakeholders. The process was overseen by a national Multi-Stakeholder Steering Committee, and monitored by a respected international non-governmental organization. The second draft instigated a further three month national review process. Over the same period:

- The UNFCCC continued work towards including reduced emissions from deforestation and degradation, conservation and sustainable management of forests (REDD+) as part of the emerging overall climate change framework. It had been

hoped that this agreement would have been codified into an international treaty at the Copenhagen Conference of the Parties to the UNFCCC in December 2009. This did not occur. The policy of the Government of Guyana continues to be that a legally binding international climate agreement, including a REDD+ mechanism, must be agreed – and the Government will continue its advocacy towards this objective at the upcoming Conferences of the Parties under the Mexican and South African presidencies in 2010 and 2011 respectively.

- Notwithstanding the overall failure to establish a legally binding international treaty at Copenhagen, most of the world's countries have recognised the Copenhagen Accord, which includes:
 - Agreement to generate a total of US\$30 billion in Fast Start Funding for the period 2010-2012, to be invested in developing countries for forest-based mitigation, other mitigation solutions and adaptation
 - Agreement to generate an annual total of US\$100 billion in public and private climate financing by 2020. The Secretary General of the United Nations has set up an expert panel to advise on how this target can be reached. Guyana's President Jagdeo, along with the British, Ethiopian and Norwegian Prime Ministers serve on this panel following the invitation of the Secretary General.
- An emerging consensus is developing for immediate, interim funding to begin to protect the world's rainforests. President Sarkozy of France and Prime Minister Stoltenberg of Norway started the "Paris-Oslo" process immediately after Copenhagen, with the support of Guyana and other countries. The aim of the "Paris-Oslo" process is to establish an "Interim REDD+ Partnership" involving most of the world's forest countries and many developed countries. Guyana will support the proposal to establish the Interim REDD+ Partnership on May 27th, 2010, in Oslo, Norway.
- On November 9th, 2009, President Jagdeo and Norway's Minister of the Environment and International Development, Mr. Erik Solheim, signed a Memorandum of Understanding, agreeing that Norway would start to provide Guyana with result-based payments for forest climate services. Norway intends to make performance-based contributions of up to US\$250 million by 2015. This is the first national-scale agreement of its kind in the world.

Support for the LCDS within Guyana is high, but not un-qualified. Based on an assessment of this support, the Government of Guyana will recommend to the National Assembly and the LCDS Multi-Stakeholder Steering Committee that Guyana should participate in an interim REDD+ arrangement for the period 2010 – 2015 if certain conditions are met, including:

- there is international agreement to generate the financing proposed by the Informal Working Group on Interim Financing for REDD+ (IWG-IFR)¹ for the period 2010-2015 in

¹ In April 2009, Guyana joined leaders of key forest countries and G20 countries at a meeting hosted by HRH the Prince of Wales on the sides of the G20 Summit in London. The leaders established the Informal Working Group on Interim Financing for REDD+ (IWG-IFR) to determine how transitional funding could immediately start to slow and avoid deforestation, while supporting the longer-term emergence of an at-scale REDD+ mechanism. The group has set out practical recommendations to achieve a 25% reduction in global deforestation by 2015 for a total cost of less than €25 billion.

line with the performance-based methodology set out in Section 2 and Appendix 1 of this LCDS – OR – a group of bilateral partners agree to work with Guyana to generate the same scale of predictable resources for the period 2010-2015. In either case, the partnership with Norway will be part of this interim arrangement.

- the United Nations Framework Convention on Climate Change includes a comprehensive REDD+ mechanism in a long-term climate regime.

Amerindian communities own their own land, and may also choose to opt in to a REDD+ mechanism in the coming years. The principles of free, prior and informed consent will under-pin the opt in process, and no deadline will be set for when communities might decide whether and how to opt in to REDD+. However, the Government will act on behalf of indigenous communities and place indigenous lands within the interim REDD+ framework if individual communities decide that they wish to participate.

Based on performance in 2009, Guyana will receive between US\$30 million and US\$42 million in payment for forest climate services in 2010, and between US\$30 million and \$64 million in 2011. These will be invested in seven priority areas: (i) Government equity in the Amaila Falls Hydro Electricity Company; (ii) accelerating Amerindian land titling, demarcation and extension processes; (iii) Amerindian Development Fund; (iv) expansion of fibre optic digital infrastructure; (v) micro-finance for Small and Medium Enterprises and Vulnerable Groups' Low Carbon Development; (vi) initial work to establish an International Centre for Bio-Diversity Research and Low Carbon Development, coupled with enhancement of the national school curriculum, and expanded IT training; (vii) work on Monitoring, Reporting and Verification Systems (MRVS) and other support for the LCDS.

Further work will be done to identify individual investments for the period 2012 – 2015. It is expected that these will be in three over-arching areas: (i) further strategic economic infrastructure, in particular opening up currently inaccessible non-forested land; (ii) facilitating investment in high-potential low carbon sectors building on the priority diversification opportunities outlined in the National Competitiveness Strategy; (iii) clean transportation programme to determine how transportation-related emissions can be reduced, especially as the overall transport sector increases with economic growth.

In parallel, in light of the continued absence of an international climate agreement, Guyana's eighth key priority in 2010/11 will be to seek Adaptation funding in line with the commitments made in the Copenhagen Accord.

As each of the above investments proceeds, consultation will take place on the individual investments, and progress reports will be issued regularly. Once the UNFCCC process defines REDD+ with sufficient clarity to commit to an arrangement beyond 2015, this LCDS will be updated at that point for further review and consultation.

1. A Low-Carbon economic development strategy for Guyana

Guyana's economic development opportunities and challenges

Guyana is reaching a new stage in its national development. As the country's first generation of reforms and infrastructural development nears completion, the Government is embarking on a new wave of reforms, coupled with further expansion of the country's strategic economic infrastructure. Over the past two decades, Guyana has transitioned to a multi-party democracy and market-based economy. Since 2001, far-reaching constitutional reform has included the establishment of six constitutional commissions and four parliamentary standing committees to promote greater inclusivity in national politics; the introduction of presidential term limits which prevent a President from being elected to more than two consecutive terms; and the restoration of parliamentary oversight to the National Budget process. An independent Office of the Auditor General reporting to the National Assembly is charged with ensuring transparency of Government expenditures, and parliamentary participation in the police, teaching, public service and judicial appointment commissions has been enabled in law.

The country's macro-economic foundations have been transformed and remain strong². Guyana has experienced positive growth in almost every year over the past two decades – GDP growth rates in 2006, 2007, 2008 and 2009 were 5.1%, 7.0%, 2.0% and 3.3% respectively³. Inflation has been kept under control, and monetary policy is implemented by an independent Central Bank. Recent years have seen the Government's stock of debt reduced significantly – with external debt now less than half what it was in the early 1990s⁴. This has enabled considerable expansion in social sectors, most notably in education, where investments are now about a third of all Government revenue⁵.

The framework for private investment has been progressively modernized, and all major political parties within the National Assembly support market-based approaches to economic growth. The corporate tax regime allows the full repatriation of profits, and the 2004 Investment Act was introduced to modernize the regulatory and legislative framework to protect private investment. There is no discrimination between foreign and domestic investors.

² The 2009 Executive Board of the International Monetary Fund (IMF) Public Information Notice states "Directors...noted that Guyana has weathered the global crisis well, sustaining a solid macroeconomic performance supported by prudent policies. Directors commended the authorities' commitment to further entrench macroeconomic stability and fiscal sustainability, while promoting long-term growth and development to improve the country's standard of living and reduce poverty. Available at: <http://www.imf.org/external/np/sec/pn/2010/pn1048.htm>

³ International Monetary Fund, Public Information Notice (PIN) No.10/48. <http://www.imf.org/external/np/sec/pn/2010/pn1048.htm>. These figures are different to those in the second draft of the LCDS, because they incorporate the re-basing of GDP to 2006 prices. The re-basing exercise was carried out as part of the overall modernization of the Public Accounts System. See Ministry of Finance, Budget Speech to the National Assembly, 2010 for further details.

⁴ Ministry of Finance, National Budgets

⁵ Ministry of Finance, National Budgets

Strategic economic infrastructure has been upgraded – including almost all of the national road network, the main international airport and hinterland air-strips. Ogle Airport is now Guyana's first privately operated international airport, the Berbice Bridge links some of the country's most productive land to Georgetown, and the bridge across the Takutu provides Guyana with its first-ever land border with any of its neighbors – in this case, linking Guyana to Brazil, and through Brazil to the rest of South America.

Coupled with the country's as yet-untapped further potential for economic development – including agricultural potential, valuable natural resources and a young, educated and English-speaking workforce - the foundations are now in place to stimulate the next wave of economic growth. This will require Guyana to seize the opportunities present in today's changing global economic environment. This means continuing the modernization of the traditional economic sectors, which have generated Guyana's historical growth and employment, while simultaneously diversifying the economy into new sectors where Guyana possesses comparative advantage⁶. Guyana's National Competitiveness Strategy prioritizes the modernization of four traditional sectors: sugar, rice, forestry, and mining. It also identifies five additional sectors with the greatest opportunities for new growth and diversification: non-traditional agriculture, aquaculture, manufacturing, business process outsourcing/information technology, and tourism.

Considerable progress has been made in building domestic capability in several of these new sectors. Yet to fully realize the potential of each, the country also needs to invest in a second generation of reform and infrastructural development to attract this higher-value investment. These reforms and investments need to address a set of challenges which include:

- Much of Guyana's several hundred thousand hectares of non-forested land available for higher-value agricultural development requires either costly drainage and irrigation (e.g., the Canje Basin) or significant road and utility investments to provide access (e.g., the Intermediate Savannahs). This makes Guyana's non-forested land less attractive than available land in other countries such as Brazil.
- Guyana's oil-dependent electricity supply is more expensive to end users than in neighboring countries (e.g., Suriname), and both cost and reliability concerns have led many major users to operate off the grid. This makes Guyana less attractive to industrial investors.
- Limited fibre optic capacity and sub-standard telecommunications infrastructure make the cost of bandwidth and other telecommunications services among the most expensive in the world, impairing Guyana's ability to develop its business process outsourcing enterprises.
- Much of the population and economic activity in Guyana exist at or below sea-level, and in-land flooding represents a significant and growing risk to investors. Major floods in 2005 caused damage equivalent to 60 percent of GDP⁷.

⁶ The policy framework to achieve these twin objectives is summarized in Guyana's National Competitiveness Strategy (NCS) – which was published in 2006. The NCS updates key aspects of the economic strategy first outlined in the National Development Strategy (NDS). Both the NDS and NCS were prepared after extensive consultations between the Government, private sector and other civil society stakeholders.

⁷ See www.eclac.org

- Guyana is not well known to major investors outside of its traditional industries. To be a catalyst for Guyana, leading international players require a business rationale to invest. Given the lack of awareness that exists, the corresponding higher perceived country-risk and the new investment required in industry-specific infrastructure, substantial incentives will be required to attract investors in these industries.

Guyana also needs to invest in further improvements in its social sectors – for example, to increase access to quality healthcare and education; to help businesses and citizens improve their access to safe and affordable water and electricity; to enhance the security of all Guyana's citizens; to protect vulnerable sectors of society; and to alleviate poverty. Furthermore, Guyana must develop the workforce which is required for a modern economy, and attract and retain skilled people – including skilled immigrants from other countries and members of Guyana's "Diaspora".

Meeting these challenges will require significant resources to transform the economy. In doing so, Guyana's policymakers have a prime responsibility to harness the value of the country's assets to promote economic and social development.

Economic value of Guyana's forests

Guyana's pristine forests are its most valuable natural asset. About 80%⁸ of Guyana's territory consists of forest that is still largely untouched. The great majority of the forest is suitable for timber extraction and post-harvest agriculture, and significant mineral deposits exist below its surface. The Office of the President, based on an independent assessment by McKinsey & Company, estimates the value of Guyana's rainforest⁹, if harvested and the land put to the highest value subsequent use, to be between US\$4.3 billion and \$23.4 billion¹⁰. The wide range of estimates is driven by fluctuating prices for commodities such as logs, rice and palm oil – but the most likely estimate is US\$5.8 billion. This forest value known as Economic Value to the Nation (EVN) is the equivalent of an annual annuity payment of between US\$430 million and \$2.3 billion, with the most likely annuity payment being US\$580 million.

However, generating this EVN, while economically rational for Guyana, would have significant negative consequences for the world. The deforestation that would accompany this development path would reduce the critical environmental value which Guyana's forests provide. Conservative valuations of the Economic Value to the World (EVW) provided by Guyana's forests suggest that, left standing, they contribute US\$40 billion to the global economy each year¹¹.

However, no trading markets exist for these environmental services today – they represent a market "externality" where the public good provided by the forests in rainforest nations is not paid for. Consequently, because forested land can generate greater economic value when put to

⁸ The reported figure in FAO Forest Resources Assessment for Guyana is 15.2M. Following finalization of Guyana's national definition of forests, a revision will be made of the total forest figure, and this is expected to be done in 2010

⁹ This estimate includes the State Forest Estate, and excludes lands under the jurisdiction of indigenous peoples, who will be able to "opt in" to the forest protection program through the national consultation process. The estimate also excludes 10% of forested land which will be allocated to protected area schemes.

¹⁰ Office of the President, Republic of Guyana. "Creating Incentives to Avoid Deforestation" (2008)

¹¹ Based on 2030 marginal abatement cost from McKinsey & Company "A Cost Curve for Greenhouse Gas Reduction", *McKinsey Quarterly*, 2007 Number 1

other uses, individuals and companies in rainforest countries face powerful incentives to exploit these opportunities. In turn, national and local governments face understandable political pressure to permit and even encourage economic activity which leads to deforestation. Many of today's richest countries actively pursued deforestation and land conversion to agriculture in early phases of development for precisely these reasons. Reconciling the tension between a national desire to protect Guyana's rainforest and pursuing economically rational development is the core challenge that Guyana is seeking to address through its Low-Carbon Development Strategy (LCDS).

The Urgent Need to protect the world's forests

Finding solutions to deforestation and forest degradation is essential to the future well-being of the planet - without these solutions, it will be virtually impossible to avert catastrophic climate change. Forest-based greenhouse gas emissions comprise about 17% of all global emissions, more than the entire European Union, and greater than the global transport sector. Recent research indicates that stabilizing greenhouse gas emissions at 450 parts per million (ppm)¹² CO₂e will require the world to reduce global emissions, relative to business-as-usual by 17Gt per annum by 2020. About 6Gt per annum, or 35% of the required emissions abatement between now and 2020 needs to come from forestry¹³.

Immediate action is essential – every year of delayed action on climate change will “cost” an irreversible 3-5 ppm increase in greenhouse gas emissions. Moreover, the damage caused by deforestation is not limited to greenhouse gases, but also includes a range of other social, economic and environmental impacts. Forests support the livelihoods of large numbers of indigenous peoples and local communities, and provide essential ecosystem services to the world – by influencing weather patterns, protecting water supplies, maintaining air, water and soil quality, providing a habitat for animal species and securing enormous biodiversity.

Yet, as the Government of Guyana first pointed out several years ago, deforestation and forest degradation happen because they have economic benefits – put simply forests are worth more dead than alive. As stated by the Informal Working Group on Interim Financing for REDD+¹⁴, of which Guyana is a member, *“Correcting the market failure that makes this happen is the key to starting to address deforestation. It will take financial resources on a systemic, international scale to create the right economic incentives for governments, businesses and individuals in developing forest countries to protect standing forests, grow new ones where appropriate, and reduce emissions from deforestation and forest degradation.”*

Since late 2006, the Government of Guyana has been calling for national-scale action by rainforest countries and international partners to address deforestation and forest degradation. President Jagdeo stated then that if the right economic incentives are created, Guyana would be willing to consider placing almost its entire rainforest under internationally verifiable protection,

¹² Much recent research is based on limiting global temperature rises to 2 degrees celcius, by stabilizing greenhouse gas concentrations in the atmosphere at 450 parts per million. Many countries have stated that this is not enough, and that temperature rises need to rise by no more than 1.5 degrees, with greenhouse gas concentrations stabilizing at 350 parts per million.

¹³ See www.project-catalyst.info

¹⁴ See http://www.unredd.net/index.php?option=com_docman&task=doc_details&Itemid=&gid=1096

provided national sovereignty and the rights and development aspirations of all Guyanese are not undermined.

A Model for the World: Protecting Guyana's rainforests while furthering economic development

Considerable progress has been made in the past 36 months towards making Guyana's vision a reality, although international climate negotiations have not yet proceeded as far as the Government of Guyana believes is necessary:

- The UNFCCC has included reduced emissions from deforestation and degradation, conservation and sustainable management of forests (REDD+) as part of the emerging overall climate change framework. Importantly, REDD+¹⁵ recognizes the importance of protecting standing forests in countries with low historic rates of deforestation. As such, there is agreement in principle to generate international payments for forest conservation. It had been hoped that this agreement would have been codified into an international treaty at the Copenhagen Conference of the Parties to the UNFCCC in December 2009. This did not occur. The policy of the Government of Guyana continues to be that a legally binding international climate agreement, including a REDD+ mechanism, must be agreed – and the Government will continue its advocacy towards this objective at the upcoming Conferences of the Parties under the Mexican and South African presidencies.
- Notwithstanding the overall failure to establish a legally binding international treaty at Copenhagen, most of the world's countries have recognised the Copenhagen Accord, which includes:
 - Agreement to generate a total of US\$30 billion in Fast Start Funding for the period 2010-2012, to be invested in developing countries for forest-based mitigation, other mitigation solutions and adaptation
 - Agreement to generate an annual total of US\$100 billion in public and private climate financing by 2020. The Secretary General of the United Nations has set up an expert panel to advise on how this target can be reached. Guyana's President Jagdeo, along with the British, Ethiopian and Norwegian Prime Ministers serve on this panel following the invitation of the Secretary General.
- An emerging consensus is developing for immediate, interim funding to begin to protect the world's rainforests. While a REDD+ mechanism under the UNFCCC is the key to a long-term solution, transitioning to a UNFCCC solution may take years – and so will not generate sufficient funding quickly enough. Recognising this, President Sarkozy of France and Prime Minister Stoltenberg of Norway started the "Paris-Oslo" process immediately after Copenhagen, with the aim of creating an "Interim REDD+ Partnership" involving most of the world's forest countries and many developed countries. Guyana will support the proposal to establish the Interim REDD+ Partnership on May 27th, 2010, in Oslo, Norway.

¹⁵ See Section 2 of this strategy for a detailed definition of REDD+

- In April 2009, Guyana joined leaders of key forest countries and G20 countries at a meeting hosted by HRH the Prince of Wales on the sides of the G20 Summit in London¹⁶. The leaders established the Informal Working Group on Interim Financing for REDD+ (IWG-IFR) to determine how transitional funding could immediately start to slow and avoid deforestation, while supporting the longer-term emergence of an at-scale REDD+ mechanism¹⁷. The group has set out practical recommendations to achieve a 25% reduction in global deforestation by 2015 for a total cost of less than €25 billion. Using highly conservative carbon estimates, this could cumulatively abate 7 Gigatons of CO₂e globally, which would be by far the biggest contribution to combating climate change during the period 2010-2015¹⁸. Guyana believes that this provides the basis for designing a solution that can be instigated at the May 27th meeting to establish the Interim REDD+ Partnership.
- On November 9th, 2009, President Jagdeo and Norway's Minister of the Environment and International Development, Mr. Erik Solheim, signed a Memorandum of Understanding, agreeing that Norway would start to provide Guyana with result-based payments for forest climate services. Norway intends to make performance-based contributions of up to US\$250 million by 2015. This is the first national-scale agreement in the world, and the Governments of Norway and Guyana believe that this can provide the world with a working example of how REDD+ might operate for a High Forest Low Deforestation (HFLD) country. The Guyana-Norway methodology is compatible with the recommendations of the IWG-IFR, giving support to the vision that Guyana can provide the world with a scaleable, replicable model for REDD+.

Toward a low-deforestation, low-carbon, climate resilient economy

This version of Guyana's Low Carbon Development Strategy (LCDS) builds on both the insights gained during the national consultation on the first and second drafts of the strategy, and on the progress made within the international framework for REDD+ and broader climate change negotiations and initiatives. It sets out how Guyana can provide the world with a working example of how immediate action can stimulate the creation of a low-deforestation, low-carbon, climate-resilient economy.

The strategy's starting point was Guyana's National Development Strategy (NDS) and National Competitiveness Strategy (NCS). The NDS sets out the country's overall development framework, with the NCS taking forward specific economic development priorities. However, both were written before the impact of climate change was fully understood, and the Low Carbon

¹⁶ Minister of External Relations of Brazil Celso Amorim, Prime Minister of Japan Taro Aso, President of the European Commission Jose Manuel Barroso, Prime Minister of Italy Silvio Berlusconi, US Secretary of State Hillary Clinton, Minister of Finance of Canada James Flaherty, Prime Minister of Guyana Samuel Hinds, Secretary-General of the United Nations Ban Ki-Moon, Chancellor of Germany Angela Merkel, Minister of Defence of Gabon Ali Bongo Ondimba, Prime Minister of Australia Kevin Rudd, President of France Nicolas Sarkozy, Prime Minister of Norway Jens Stoltenberg, Prince Saud Al'Faisal of Saudi Arabia, President of Indonesia Susilo Bambang Yudhoyono, President of the World Bank Robert Zoellick

¹⁷ See <http://www.princesarainforestsproject.org/what-the-projects-doing/news#meeting-0104>

¹⁸ See http://www.unredd.net/index.php?option=com_docman&task=doc_details&Itemid=&gid=1096

Development Strategy augments them with an updated analysis on how some of the goals of the NDS and NCS can be achieved, with a focus on doing so in a low-carbon manner.

- Section 2 outlines how Guyana's forest provides a valuable service to the world, and how payments from Guyana's climate change partnership with Norway, augmented by payments through the Interim Partnership on REDD+ based on the recommendations of the IWG-IFR, and subsequent integration into a UNFCCC REDD+ mechanism, can create the platform for an effective strategy to avoid deforestation and forest degradation. This can enable Guyana to avoid emissions of 1.5 gigatons of CO₂e (carbon dioxide equivalent which includes other greenhouse gases) by 2020 that would have otherwise stemmed from an economically rational development path).¹⁹
- Section 3 outlines how payments can enable Guyana's economy to be realigned onto a low-carbon development trajectory. Guyana can generate economic growth at or in excess of projected Latin American growth rates over the coming decade, while simultaneously eliminating approximately 30 percent of its non-forestry emissions through the use of clean energy - approximately 12 megatons of CO₂e by 2020.²⁰
- Section 4 outlines how Guyana's Amerindians will be enabled to participate in REDD+ and the LCDS if they choose to opt in to the strategy in accordance with the principles of free, prior and informed consent.
- Section 5 outlines how investments in priority climate adaptation infrastructure can reduce the 10% of Guyana's current GDP which is estimated to be lost each year as a result of flooding.²¹ Initial financing for Adaptation priorities will draw on the Fast Start Funding agreements in the Copenhagen Accord.
- Section 6 outlines how the Low-Carbon Development Strategy can be implemented, and sets out the institutional framework through which payments would be administered
- Section 7 outlines how long-term support for the LCDS and REDD+ is being built in Guyana through a transparent, inclusive, multi-stakeholder consultative process.
- Section 8 assesses an illustrative model of REDD+ and sets out the conditions under which the Government believes that there might be a basis for the National Assembly and Multi-Stakeholder Steering Committee to endorse action to participate in REDD+ for the period 2010-2015.
- Section 9 focuses on forging Guyana's new economy during the period 2010-2015, and sets out the priority investments for the first years of the LCDS's implementation.

¹⁹ Assumption is loss of above and below ground biomass, at 418 tCO₂e per hectare, from FAO Forest Resources Assessment 2005 (cited in OSIRIS v2.2)

²⁰ Guyana's National GHG Inventory (1998 UNFCCC Reporting); McKinsey & Company, "Global GHG Abatement Cost Curve v2" (2009)

²¹ Office of the President, Republic of Guyana, "Economic Impact of Adaptation" (unpub.)

2. Deploying Guyana's forests in the battle against climate change

Building an International Partnership

The Government of Guyana supports:

- international proposals to cut greenhouse gas emissions from deforestation and forest degradation in half by 2020, and make the global forestry sector carbon neutral by 2030 – where emissions from deforestation and forest degradation are balanced by new forest growth.
- the proposals of the Informal Working Group on Interim Financing for REDD+ (IWG-IFR), which state that action on deforestation and forest degradation must start immediately, and not wait until the expiry of the first commitment period of the Kyoto Protocol (2013). Instead, forest-based emissions reductions are needed from 2010, building to a 25% reduction in emissions from global deforestation and forest degradation by 2015.

Without meeting these targets, it will be impossible to limit the rise in global temperature to less than 2 degrees Celcius above pre-industrial levels. The position of the Government of Guyana is that the United Nations Framework Convention on Climate Change (UNFCCC) must include REDD+ in a binding international treaty to achieve these long-term goals.

This will require reconciling the national development interest of all forest countries with global needs for emissions reductions - by generating both a *willingness to participate* from forest countries and a *willingness to pay* from developed countries (whether from public or private sources).

Willingness to Participate Forest countries are unlikely to choose to participate in REDD+ unless it is a positive development option. In Guyana, the process towards making this choice is proceeding in accordance with a three-step methodology.

- Step 1 – Establish Economic Value to the Nation. Forest countries must first establish a long-term valuation (EVN) of their forestry assets without REDD+. This is the “opportunity cost” of participation in REDD+, and in Guyana’s case the most likely value is US\$580 million per year.
- Step 2 – Evaluate REDD+. REDD+ becomes a positive development option for forest countries if it passes four tests:
 - REDD+ places a value on a country’s forest that can out-compete EVN over a reasonable time-frame
 - predictable REDD+ funds are available to pay for a country’s performance against emissions targets
 - REDD+ does not entail an excessive transaction cost or administrative burden for domestic stakeholders
 - REDD+ has the support of the population, especially those who live in or depend on the forest

- Step 3 – Decide whether to participate in REDD+. Participation in REDD+ should not be entered into lightly by forest countries as it represents a fundamental change in the development trajectory of forest-dependent communities and the entire country.

Willingness to Pay Those who would pay for REDD+ (whether from international public or private sources) need to assess REDD+ against a different set of tests:

- REDD+ must pay for actual emissions reductions, i.e. the cumulative global forest-based reductions must be additional, permanent and avoid national and international leakage (where emissions reductions in one area lead to increases in another).
- REDD+ must involve limited, time-bound international public funding and / or a supply of credits from carbon markets that increases for a period, and then decreases in line with global emissions reductions targets.
- the use of REDD+ funds must meet appropriate international norms for fiduciary, social and environmental safeguards.
- REDD+ funds should be invested in activities that are compatible with broader low carbon development.

Defining REDD+

REDD+ originated in 2005, when Papua New Guinea and Costa Rica proposed a mechanism for Reducing Emissions from Deforestation and Degradation (REDD)²². In 2007, the Bali Action Plan²³ adopted a description of REDD+, which was subsequently improved in 2008²⁴:

“policy approaches and positive incentives on issues relating to reduced emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest stocks in developing countries.”

However, a detailed definition is not yet agreed, and without it, both forest countries and potential international partners are unable to assess REDD+ in order to make long-term commitments. To assist in determining the best way forward for REDD+, Guyana has agreed an interim definition in partnership with Norway. This builds on the proposals of the IWG-IFR and is informed by the current status of the UNFCCC process.

Using a categorization of REDD+ outlined in the “Little REDD Book”²⁵, there are up to four building blocks used in defining REDD+:

Scope: This is the set of activities that are eligible for generating financing for emissions reductions under REDD+. The Government of Guyana and most of the international community believe that REDD+ must create incentives to reduce emissions from deforestation and forest

²² at COP-11 of the UNFCCC in Montreal. At COP 13 in Bali

²³ at COP-13 of the UNFCCC in Bali

²⁴ at COP-14 of the UNFCCC in Poznan

²⁵ See <http://www.globalcanopy.org/main.php?m=117&sm=176&t=1>. Foreword written by President Jagdeo.

degradation, promote sustainable management of forests, enhance carbon stocks and conserve forests, in line with the Bali Action Plan.

Reference Level: A country's reference level is the metric against which future REDD+ emissions reductions are to be measured, and for which payments will be made. International REDD proposals have included setting this reference level through the use of historical baselines, stock/average emissions baselines, and projected baselines. In December 2008, Guyana published a paper²⁶ which put forward the view that setting reference levels should be driven by analysis that assumes rational behaviour by countries seeking to maximize economic opportunities for their citizens. A country's *national* 'economically rational' rate of deforestation will be different depending on historical circumstances, and so REDD+ must create sufficient incentives for all major forest countries – including those with historically low deforestation rates.

There is now broad-based international consensus on the need to incentivize low deforesting countries through reference levels which measure avoided deforestation against a *global* deforestation baseline. As stated in the UK's Eliasch Review: "Baselines that take account of the global average deforestation can incentivize action to retain or enhance standing forests. Credits for avoided deforestation would represent payment for a global service, especially as successful action in high-deforesting countries may increase pressure to deforest in nations where deforestation rates are currently low. In order to meet the above criteria, baselines should take account of a country's historical emissions rate and the global average deforestation rate. This will ensure that emission reductions in the forest sector are additional while acting against international leakage by being inclusive."

Building on this overall orientation, the IWG-IFR report states "... the costings for a 25% reduction [in global deforestation and forest degradation by 2015] ...use.... a reference line method which combines payments for reduced deforestation and protecting standing stock.... There are a number of recognized potential options... consistent with the requirements of the interim period...." In the absence of a single methodology that incentivizes all countries, the report used a number of different methodologies²⁷ to establish a range of costs for a 25% reduction in global deforestation²⁸.

To be compatible with these international frameworks, Guyana will use the combined reference level method²⁹ to establish its interim reference level:

$$\text{Combined Reference Level} = (0.5 (\text{Historical deforestation rate, national}) + 0.5 (\text{Global deforestation rate}))$$

Distribution: The "distribution" building block set out in the "Little REDD+ Book" reflects the reality that the above view of reference levels is widely, but not totally, accepted. Some international proposals suggest that financial incentives might be distributed or allocated to countries with standing forests through additional (separate) sources of funding, and that

²⁶ <http://gina.gov.gy/booklet%20on%20avoided%20deforestationf.pdf>

²⁷ Reference Lines used were historical only, combined reference line, combined incentive, stock flow, Mollicone and Mollicone modified – http://www.unredd.net/index.php?option=com_docman&task=doc_details&Itemid=&gid=1096

²⁸ Exhibit C.21 in the IWG-IFR report

²⁹ See Chapter 9 of Government of the United Kingdom. Climate Change: Financing Global Forests: The Eliasch Review United Kingdom: 2008.

reference levels should only be set for countries with high historic rates of deforestation. The Government of Guyana believes that this form of funding would involve excessive complexity, would not attract the participation of all forest countries and so would be an inefficient use of scarce funding for climate services.

Financing: Finance for REDD+ can be grouped into four main categories: carbon market, market-linked, voluntary funding mechanisms, and a UNFCCC-mandated global fund for REDD+. There is not yet a consensus within the UNFCCC about which form(s) of financing are to be used. The policy of the Government of Guyana is that the UNFCCC must agree a path to the inclusion of REDD+ in the international carbon markets. This is based on a variety of analyses which put the cost of meeting the global targets outlined above at up to US\$60 billion per annum for REDD+ globally. These funds will need to be additional to the funds needed for other forms of mitigation and adaptation, and it is the Government of Guyana's view that raising funds of this scale can only happen through leveraging private capital.

However, this requires (i) the developed world to make far deeper, legally binding, cuts in their domestic emissions than are currently being proposed. This is needed to generate sufficient demand from carbon markets for REDD+ without domestic efforts in Annex I countries being reduced; (ii) strong rules to ensure that a market-based REDD+ would benefit forest communities and countries. Neither of these conditions is yet in place.

As such, the Government believes that non-market (international fund-based) options will have an important role to play in the coming years, in advance of market access. In addition, the UNFCCC should create a "menu" of options for REDD+, where countries (unlike Guyana) that do not wish to participate in the carbon markets at any point can access other appropriate incentives.

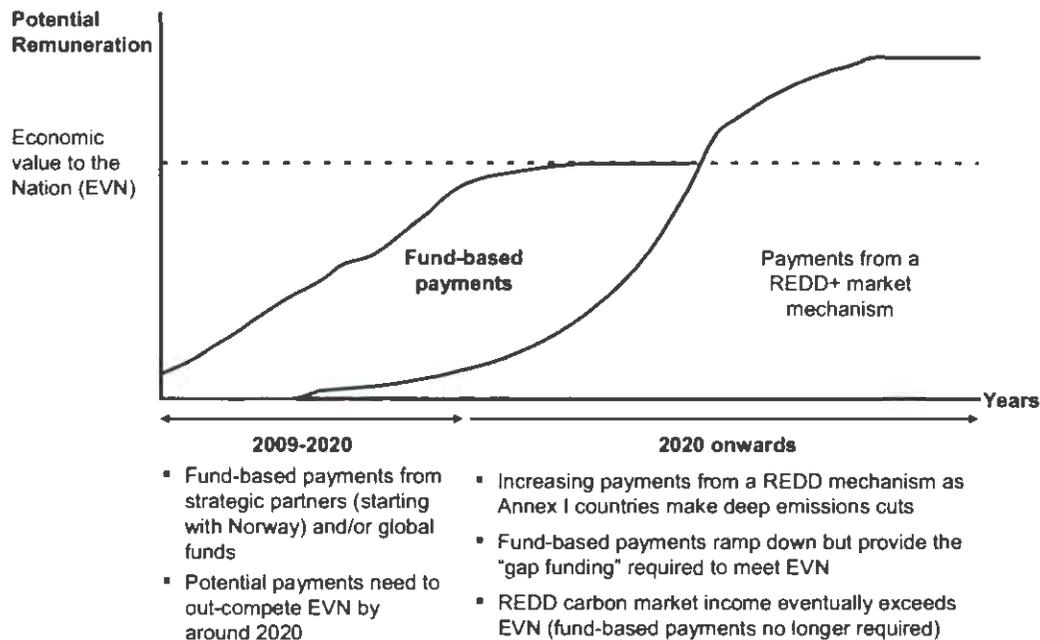
Therefore, as illustrated in Exhibit 1, the Government of Guyana supports a phased approach to REDD+: (i) a fund-based mechanism for REDD+ from 2010, and (ii) gradually merging REDD+ into the carbon market(s). Starting in 2013, a portion of each country's rainforest should be assigned forestry emissions quotas or carbon credits (known as REDD Credits)³⁰ as offsets to trade within the carbon markets. Over years, the portion of rainforest for which REDD Credits are assigned should be progressively increased in line with a trajectory which prevents "flooding" the markets.³¹ The Eliasch Review suggests that the carbon markets should be able to meet 22 percent of forestry abatement costs by 2020 and as much as 75 percent by 2030.

³⁰ Assigned Amount Units: cited in the Eliasch Review as "tradable sovereign allowances to emit CO₂e"

³¹ Market flooding involves an excessively large supply of credits into the market and may result in reduction in carbon price and/or deterrence of investment in low-carbon technologies and other abatement options

Exhibit 1 – Fund based REDD+ followed by Market Access

ILLUSTRATIVE



SOURCE "Climate Change: Financing Global Forests: The Elsasch Review", Government of the United Kingdom (2008)

f

A Model for the World: Implementing REDD+ in Guyana

Guyana is the first country in the world to attempt national scale action on REDD+. In doing this, it is hoping to help other forest countries and the international community resolve many of the technical issues that currently make progress difficult. In June 2009, the Government of Guyana set out how REDD+ could be progressively integrated into the Guyanese economy in four phases, as set out in Exhibit 2. As part of this effort, interim reference level and payment methodologies have been established, and these are being used in the partnership with Norway. They are set out in detail in Appendix I.

Exhibit 2 – Indicative Remuneration for LCDS

Phase	REDD+ Payments Available to Guyana	Description
Phase 1 (2009)		<ul style="list-style-type: none"> ▪ Interim payments to launch the LCDS ▪ Includes funding for an MRV system in Guyana
Phase 2 (2010-2015)	<ul style="list-style-type: none"> ▪ Starts at: ~\$60 million ▪ Ramps up to \$230-\$350 million (40%-60% of EVN) 	<ul style="list-style-type: none"> ▪ Transitional funding that will be used for: <ul style="list-style-type: none"> – Capacity building – Investment required to build a low carbon economy – Human capital development
Phase 3 (2013-2020)	<ul style="list-style-type: none"> ▪ Starts at: ~\$230-\$350 million (40%-60% of EVN) ▪ Ramps up to \$580 million (EVN) 	<ul style="list-style-type: none"> ▪ Continued payments to avoid deforestation ▪ Payments will be used for further: <ul style="list-style-type: none"> – Investments in low carbon economy – Capacity building – Climate change adaptation
Phase 4 (2020 onwards)	<ul style="list-style-type: none"> ▪ At or above EVN (>\$580 million) 	<ul style="list-style-type: none"> ▪ "At-scale" REDD mechanism should: <ul style="list-style-type: none"> – Provide incentives at or above EVN – Account for increasing value of the forests (e.g., reset EVN periodically)

Phase 1, 2009: Launching the Low Carbon Development Strategy

During this start-up phase, the aim was to:

- Demonstrate that Guyana is committed and able to carry out its Low-Carbon Development Strategy (LCDS) while protecting its standing forests;
- Gain broad support for the LCDS through visible support from Guyana's partners.

A four-month national consultation took place to engage stakeholders in the formulation of the first draft of the strategy. Guyana started to develop an internationally-accepted forest monitoring, reporting, and verification system (MRVS), to source capital for strategic investments required to start implementation of the low-carbon development strategy, and began to execute on initial priority investments (e.g., hydropower).

On November 9th, 2009, Guyana and Norway signed a joint agreement, where Norway intends to pay for up to US\$250 million of the forest climate services that Guyana provides during the period 2010-2015. The countries stated their joint intention to seek other partners to assist in providing a working example of how partnerships between developing and developed countries can save the world's forests. The details of this agreement are in Appendix I.

In December, 2009, the second draft of the strategy was released for review, and set out an initial framing of the conditions under which Guyana would agree to engage in Phase 2 (see Section 8 of this document).

Phase 2, 2010-2015³²: Starting to Participate in REDD+ and Building the Foundation for the New Economy

In Phase 2, Guyana will receive increased payments from partners (starting with Norway, but the scale of funding to re-orient the economy onto a low carbon path will require the participation of other global partners) to:

- Participate in an Interim REDD+ arrangement from 2010 to 2015, utilizing Norway funds, further bilateral agreements, and funds secured under the Fast Start Funding and 2013-2020 Funding agreements as set out in the Copenhagen Accord.
- Execute and deliver on five to ten priority infrastructure projects needed to re-orient the economy toward low-carbon growth.
- Attract major international investors in at least three key new economic sectors such as hydropower, high-end fruits and vegetables, and aquaculture.
- Implement the most critical climate adaptation measures and signature programs to improve health care and education.
- Integrate forest land-use policies with the LCDS – through integrated land use planning for forestry and mining and other forest-based land uses
- Deepen the quality and comprehensiveness of the MRV system and other capacities necessary to protect the forests.
- Work with indigenous communities who want their land included in REDD+ (Interim REDD+ to start) and incorporate them in the payment system.
- Accelerate the demarcation, titling and extension of Amerindian lands.
- Seek Expressions of Interest from potential investors in Guyana's possible REDD+ Credits from REDD+ post-2013.
- If other markets for environmental services emerge – (for example Payments for Environmental Services (PES) for bio-diversity) - their potential will also be examined during this period, and Expressions of Interest will be considered.

Phase 2 is described in more detail in Section 9.

³² In the initial draft of the LCDS, this phase was 2010 – 2012. This has been re-calibrated to align with the proposals of the Interim Working Group on Interim Financing for REDD+, following the actions of G20 and forest countries in 2009.

Phase 3, 2013-2020³³: Integrating the New Economy with a Global Climate Deal

During this longer phase, fund-based forest payments should gradually increase to value the forest towards the level of EVN. In parallel, REDD+ payments from carbon compliance markets should ramp up as these markets open up to an increasing flow of REDD credits and the increased supply of REDD+ credits make it possible to generate more forest payments from public and private sources.

During these years, Guyana will:

- Continue to invest in the high priority low-carbon economic infrastructure and adaptation priorities. By this time, Guyana should begin to see large-scale transformation in several target industrial sectors based on longer-term investments and the presence of international companies. Combined with expanded education and health programs and other investments, Guyana should also begin to reap benefits in growth in higher-value services sectors (e.g., Business Process Outsourcing).
- Build further capability, as needed, to manage and invest funds, drive economic development projects and deploy the forest MRV system and related capabilities with the intent of having fully-developed institutional capabilities in these areas as effective institutions for the nation and exemplars to the world. The Government will also promote the dispersion of these management capabilities throughout the Guyanese government and the private sector. An aspirational goal is to stop, and hopefully reverse, the “brain drain” of skilled labour, which would further help develop Guyana’s economy.
- Agree on the first set of REDD+ investments which will take advantage of opportunities to export forest offset credits originated by the Government or private investors into greenhouse-gas compliance trading markets (global, regional or national) that have sufficient availability of offset access rights.

Phase 4, 2020 onwards: Operating “at-scale” under a functioning international REDD+ regime

At the point when available financial flows for REDD+ from carbon markets are at EVN or higher, Guyana should be able to fund its further low-carbon development efforts from these flows, and have sufficient confidence to make economic decisions on the basis of predictable payments. It would no longer need international fund-based payments. If an “at-scale” market-based REDD+ mechanism that values Guyana’s forest at or above EVN emerges before 2020, Guyana would agree to move to Phase 4 as of this date.

³³ Partial overlap with Phase 2

3. Creating a low-carbon economy

The previous section described a new approach for valuing standing forests – where the right action by the international community could deliver value both to rainforest nations and to the wider world by making forests worth more alive than dead. If this approach is successful, it frames economic choices in favour of protection, although it will not stop existing economic activities or threaten the employment of those already working in the forest, providing those activities are in accordance with the law and internationally accepted practices for sustainability. Instead, it will lead to action in four areas that are essential to Guyana's future:

- Investing in low-carbon economic infrastructure
- Facilitating investment and employment in low-carbon economic sectors
- Sustainably managing forest-based economic sectors, in particular forestry and mining
- Generally enhancing the nation's human capital and creating new opportunities for forest-dependent and other indigenous communities.

Investing in strategic economic infrastructure

Guyana has identified more than US\$1 billion in essential capital projects that can be fully or partially funded through private investment assisted by the Guyana REDD+ Investment Fund (GRIF), an in-country infrastructure investment fund built from forest payments. Among other initiatives, these projects will enable future economic growth to be powered predominantly by clean energy (hydropower), and to make non-forested parts of the country accessible to private investors who can generate low-carbon economic development and employment (largely high-end agriculture and aquaculture). These infrastructure projects would begin to shift the economy toward low-carbon industrial activity, and enable greater resources to be deployed towards ensuring that existing infrastructure in forested areas does not facilitate an increase in deforestation and degradation.

Initial investments focus on three types of infrastructure:

- **Hydropower (US\$650 million).** Currently, Guyana relies on imported fuel oil and diesel for its electricity generation, which is both expensive and carbon-intensive. Guyana has identified a hydro site at Amaila Falls which will deliver energy security by meeting all of the country's domestic power needs for the foreseeable future, improve Guyana's balance of payments (fuel imports in 2008 cost approximately 35% of GDP), and reduce end-user costs significantly. Excluding emissions from construction of the plant, the carbon abatement by 2020 can be approximately 12 megatons of CO₂e. Further details are set out in Section 9.
- **Fiber Optic Cables/Technology Park (US\$10 million to \$30 million).** According to estimates by Accenture, Guyana's outsourcing industry has the potential to more than double the number employed by 2013³⁴. Industry stakeholders have identified telecommunications infrastructure as a key barrier to sustaining industry growth – for example, Guyana is competitive in all inputs to cost per seat (the key industry metric) with the exception of the

cost of telecommunications bandwidth. Investment in fiber optic cables and a technology park will remove these impediments to further industry growth; they will also reduce the cost of telecommunications for individuals and companies nation-wide, and they will enable remote communities to be connected to Government services. Further details are set out in Section 9.

■ **Drainage, irrigation, road construction, and off-grid power to improve access and provide infrastructure for agro-industrial investment in currently unused, non-forested land (US\$ 200 to \$ 400 million).** Guyana has substantial, unused non-forested land that can be converted to productive use for cash export crops. However, lack of infrastructure currently makes the land inaccessible and/or substantially increases its development cost above competitive options for developers. For example, in the Intermediate Savannah about US\$50 million in roads, power, communications, and other infrastructure investment is needed to attract future investors and workers. By developing infrastructure into these parts of the country, economic activity and employment will be re-oriented away from areas in the interior which put pressure on the forest. Further details are set out in Section 9.

Facilitating investment in high-potential low-carbon sectors

Attracting large-scale catalytic investors to Guyana will require incentives to finance industry-specific infrastructure and overcome perceived country investment risk. Building on the priority diversification opportunities outlined in the National Competitiveness Strategy, Guyana has identified six priority low-carbon economic sectors: fruits and vegetables, aquaculture, sustainable forestry and wood processing, business process outsourcing, eco-tourism, and possibly bio-ethanol. Guyana plans to focus initially on three sectors: fruits and vegetables, aquaculture, and sustainable forestry. In each of these sectors, long-term market demand exists and Guyana has the essential natural resources to operate at scale.

1. Fruits and Vegetables. Guyana is well-positioned to expand exports of fruits and vegetables as it has major tracts of non-forested arable land that are potentially suitable for commercial agriculture – and the country is close to major fresh fruit and vegetable import markets in the Caribbean and the United States. The enablers, costs, and benefits of this investment are summarized below:

³⁴ Office of the President, Republic of Guyana. "Stimulating Growth in the Business Processing Outsourcing Sector"

Exhibit 3

Guyana could become a competitive global producer of tropical fruits and vegetables

Can Guyana become an internationally competitive fruits and vegetable producer?		Impact on Guyana's economy of capturing 50% share of CARICOM fruit/vegetable imports	
Key requirements	Assessment	Impacts	Estimate
A There is land available and suitable for production	<input checked="" type="checkbox"/>	Government revenue p.a., 2013 \$US millions	40-110
B Guyana can produce these crops in a cost competitive way in the region	<input checked="" type="checkbox"/>	Potential job creation, after 2013 thousands of employees	4-10
C The necessary infrastructure and labor force can be put into place	<input checked="" type="checkbox"/>	Initial investment*, 2009 \$US millions	80-100
D Guyana is well positioned to supply unmet demand in Caribbean / Brazil markets	<input checked="" type="checkbox"/>	Net exports impact per annum after 2011 \$US millions	250-350
E Guyana can attract partners with the right managerial and technical know-how to succeed	<input type="checkbox"/>	Overall impact	Medium
Overall assessment	<input checked="" type="checkbox"/>		

* Including investment incentive

To capture this opportunity, Guyana needs to attract several large-scale commercial agriculture operators to help it overcome logistical and quality control issues such as lack of processing facilities, limited ability to comply with sanitary/phytosanitary standards, and weak links to key import markets. Based on interviews with leading global fruit and vegetable producers, it is clear that Guyana will need to provide significant financing incentives, offer a substantial land area to attract leading operators, and improve its investment support to new investors. Such "sector-leading investment" will be the basis of broader-based growth in this sector.

2. Aquaculture. Guyana has an opportunity to provide fresh and frozen fish to its Caribbean neighbors and other importing nations. In the United States alone, the seafood demand deficit is forecast to be approximately 1 billion pounds by 2025. Increasing demand and attractive margins for fresh-water fish make this investment particularly attractive to Guyana. The enablers, costs and benefits of this investment are summarized below:

Exhibit 4

Guyana could become a competitive global producer of aquaculture products

Can Guyana become an internationally competitive fish producer?		Impact on Guyana's economy would be	
Key requirements	Assessment	Impacts	Estimate
A There is land available and suitable for production	<input checked="" type="checkbox"/>	Government revenue p.a., 2013 \$US millions	150-200
B Guyana can produce fish in a cost competitive way in the region	<input checked="" type="checkbox"/>	Potential job creation, after 2011 Thousands of employees	13-16
C The necessary infrastructure and labor force can be put into place	<input type="checkbox"/>	Initial investment, 2009 \$US millions	135-175
D Guyana is well positioned to supply unmet demand in Caribbean / Brazil markets	<input checked="" type="checkbox"/>	Net exports impact per annum after 2011 \$US millions	500-1,000
E Guyana can attract partners with the right managerial and technical know-how to succeed	<input checked="" type="checkbox"/>	Overall impact	Large
Overall assessment	<input checked="" type="checkbox"/>		

While aquaculture will require significant start-up costs (approximately \$15,000 per hectare), the industry, once-established, would allow Guyana to tap into large and growing markets in fresh fish, frozen and processed product. Guyana has 55,000 hectares of state-owned, uncultivated coastal lands and up to 118,000 hectares in the intermediate savannahs. In addition, Guyana has hinterland areas that are suitable for production of fish or crustaceans, such as tilapia and shrimp. One hectare of land properly maintained can produce up to 23 tons of fresh water fish. In the medium term, Guyana will look to set up one to two major tilapia farms producing 5,000 to 10,000 tons annually.

Guyana will work to attract potential investors to help it establish its aquaculture industry, which will entail developing a system of pond excavation, drainage and irrigation pipes, and predation defense measures. These international partners will also help Guyana comply with sanitary standards, establish efficient logistics, and connect the country to import markets.

While aquaculture is an attractive market, Guyana will have to work to provide incentives to attract large-scale investors. Guyana's costs are likely to be above those of Asian producers for frozen fish and shrimp, and Guyana currently lacks a large-scale, fresh fish-exporting infrastructure. Finally, since upfront costs are high, investors will want assurances that aquaculture is feasible in Guyana.

3. Other potential investment opportunities: business process outsourcing (BPO), ecotourism, and possibly bio-ethanol. Over the longer term, Guyana has an opportunity to build its services sector. By investing in its infrastructure, its workforce, business environment, and marketing, Guyana can expand its nascent business process outsourcing (BPO) industry, providing a variety of services and employment opportunities. As noted above, the low cost of labor and the English-speaking population make Guyana an attractive outsourcing location.

Guyana's tourism industry also has potential, particularly in the eco-tourism segment; the global eco-tourism market is approximately \$50 billion (or 6 percent of the \$860 billion general tourism market) but is growing rapidly (20-30 percent per year). Guyana has the potential to develop its eco-tourism industry - however, tourism development requires a gradual build-up of capabilities, infrastructure and brand over time.

Finally, Guyana could enter the clean energy market by becoming a bio-ethanol producer. The 142,000 hectares tentatively set aside for bio-fuel production at the Canje Basin would allow it to produce bio-ethanol at commercial scale. Guyana's bio-ethanol industry would benefit from existing trade agreements with the United States, which would serve as a large export market. While Guyana is not the world's lowest cost sugar producer, it has the potential to be competitive in bioethanol production if it can use latest technology in a fully utilized at-scale facility. The lack of ethanol-producing production and transport infrastructure necessitates the participation of large investors to create this new industry. These investors would likely require large land tracts in order to earn a scale-based return. As noted earlier, the potential sites would require significant infrastructure investment.

Sustainably managing the forestry and mining sectors

Guyana's forestry and mining sectors are major contributors to the economy. They provide employment for tens of thousands of Guyanese citizens, income for tens of thousands of families, and generate significant Government revenue that is invested in public services. At the same time, they are the chief contributors to Guyana's existing, albeit low rates of, deforestation and forest degradation. Reconciling the need to balance the economic value and employment generated by these sectors with the desire to limit forest-based emissions is one of the most important and complex challenges in implementing REDD+ and the LCDS³⁵.

Forestry Guyana's forestry sector accounts for approximately US\$45M to US\$60M in export value and employs over 20,000 persons. There are 31 large concessions in Guyana and 348 small concessions, all of which are privately owned and operated. The State holds no equity or other management interest in any forest concession. The Government, through the Guyana Forestry Commission manages and regulates the activities of forest concessions to ensure that strict sustainable forest management rules and guidelines are implemented and that forest legislation is implemented effectively by operators. Logging companies have to complete comprehensive forest management and annual planning which includes forest inventory, and are required to comply with detailed control procedures and legality assurance measures and log tracking³⁶.

³⁵ Guyana's Readiness Preparation Proposal (RPP), prepared for the Forest Carbon Partnership Facility, sets out further detail on how the forests carbon stocks will be managed in a way which aims to achieve carbon neutrality over time. In all sectors, REDD+ will enable greater resources to be devoted to addressing illegal activities, and improving governance where necessary. The specific measures to achieve this are specified in the RPP, and will be further developed in the REDD+ Governance Development Plan, which will be finalized by October 2010.
http://forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/Sep2009/Readiness_Preparation_Proposal_Revised_September_7_2009.pdf

³⁶ The Guyana Forestry Commission is working to implement a multi-year programme to further improve forest governance. The Governments of Guyana and Norway jointly engaged the Center for International Forestry Research

The Government's policy is to support companies operating in Guyana to generate substantially more value from the limited portion of the forest where sustainable forest harvesting is appropriate. As much as \$300 million more in annual value could be realized from a shift to integrated primary and secondary processing and more efficient extraction within the existing stringent limits on logging. The enablers, costs and benefits of this investment are summarized below.

Exhibit 5

Guyana can sustainably extract value from its forest resources by moving up the lumber value chain

Can Guyana become an internationally competitive processed lumber producer?		Impact on Guyana's economy would be	
Key requirements	Assessment	Impacts	Estimate
A There are available forest resources that can be harvested sustainably	<input checked="" type="checkbox"/>	Net exports impact per annum after 2011 \$US millions	-200-300
B Guyana can use market mechanisms to keep logs in the country for processing	<input checked="" type="checkbox"/>	Potential job creation, after 2011 thousands of employees	-15-30
C The necessary infrastructure and labor force can be put into place	<input checked="" type="checkbox"/>		
D Guyana is well positioned to supply demand for processed wood products	<input type="checkbox"/>		
E Guyana can attract partners with the right managerial and technical know-how to succeed	<input type="checkbox"/>		
Overall assessment	<input checked="" type="checkbox"/>	Overall impact	Medium

The global market for well-dimensioned processed lumber is large and growing rapidly, and prices for processed products are significantly higher than for raw logs. The global export of secondary processed tropical wood products (including molding and furniture) from forested countries exceeded US\$11 billion and grew 9.2 percent in 2006. Prices for secondary processed products vary widely, from US\$400 per m³ and up, compared to approximately US\$130 per m³ for raw logs.

(CIFOR) and the Food and Agriculture Organisation of the United Nations (FAO) to carry out independent assessments of forest-related governance in Guyana. Their recommendations, in addition to relevant legislation, policies and processes in Guyana, will be used as a basis to prepare a REDD-plus governance development plan before October 2010. Part of this will include analyzing the drivers of deforestation and forest degradation in Guyana (not just those from the forestry sector) and implementing Independent Forest Management (IFM) – where partnerships will be established between the GFC and an appointed monitoring organization to provide an independent third party assessment of legal compliance, and observation of and guidance on official forest law enforcement systems.

New investment in processing activities in Guyana would facilitate even greater production of higher-value wood products that meet international standards for export and could bring new capabilities in waste minimization and recovery, as well as market linkages to enhance export value of processed products. In addition, Guyana will support local and international firms in increasing end-user demand for products from Guyanese species. The Government will not permit the conversion of primary forest to plantations.

The Government and the forestry industry are currently investigating how best to support further international processes to assist in global efforts to support the trade in sustainable forestry products. Work has started to investigate joining both the European Union Forest Law and Enforcement Governance Trade and Extractive Industry Transparency Initiatives processes if appropriate.

Mining The mining industry is a significant contributor to Guyana's Gross Domestic Product (10.5% in 2009), with a total value output of over US\$300 million, and creates direct employment for over 9000 persons. Of the three sectors within the industry, large scale; stone and sand; and small and medium scale gold and diamond, the latter accounts for the majority of mining operations with approximately 950 land and river operations. The Guyana Geology and Mines Commission (GGMC) is tasked with regulating all activities in the mineral sector, including the issuance of permits and licenses.

Under the LCDS, mining activities are not required to cease or be curtailed. However, like forestry and all other extractive industries, mining will be required to adhere to laws and regulations governing this sector and operate in accordance with acceptable international standards. The Mining Act and environmental regulations for mining predate the LCDS and came into force through a process of country-wide education and awareness and input and endorsement from the mining sector. Throughout the LCDS process, there have been direct engagements with the mining sector with the involvement of small, medium and large scale miners to provide a better understanding of the LCDS and its implications for the sector.

An inter-sectoral land use committee has been established to provide support to the sector in implementing measures, to improve sector performance and improve coordination between mining and forestry operations. These measures include post-extraction site restoration; the phasing out of mercury; the introduction of prospecting before mining (currently under discussion); and general support to optimize mining recovery.

The GGMC has also increased its monitoring and enforcement in the field as well as support to miners through technical assistance and guidance, alongside the establishing of miners' committees to facilitate the process.

All of these initiatives will be supported from REDD+ payments and where necessary, compensation could be provided to those whose livelihoods may be impacted negatively as a consequence of REDD+-related activities.

Investing in Communities and Human Capital

Transforming Guyana's economy will require striking a balance between attracting large, long-term private investors who will have a catalytic impact on the national economy, and making

significant investments in human capital and social services to equip the population for participation in the new economy. It will also require a balance between using forest payments to enhance the opportunities for those who live in the forest and recognizing the rights of other Guyanese citizens, including the urban poor. The importance of benefit sharing with Guyana's Amerindian communities is particularly important, and is covered in Section 4.

To meet the needs of both forest dwellers and the population at large, Guyana will invest a significant share of the forest protection funds it receives in initiatives aimed at developing jobs and diversifying the jobs base, and improving the general standards of living of all of its citizens. Key areas of investment will include:

- **Improving job prospects and private sector entrepreneurship.** Guyana will invest in targeted education initiatives to fuel economic growth, potentially including specialized vocational training (e.g., for business process outsourcing), creation of a management school, and establishing a center of biodiversity excellence.
- **Supporting social services** such as basic infrastructure (road maintenance, reliable supplies of potable water) and health and education services.
- **Expanding telecommunications** to provide currently un-connected communities with information and access to Government and other services.
- **Incorporating Low Carbon Development and Climate Change into the national education curriculum** Guyana's national consultation on the Low Carbon Development Strategy highlighted that Guyana has one of the highest levels of awareness of Low Carbon Development and Climate Change in the world. However, these are complex topics, which will benefit from more formal education initiatives, particularly those that aim to sensitise and inform the young. The Government intends to incorporate climate change modules in schools, starting with a pilot during the school year that begins in September 2010.

4. Creating Opportunities for Amerindian Communities

Amerindians total approximately 9.1 percent of Guyana's population and currently own approximately 13.9 percent of the land, up from 6% in the early 1990s.

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

This section sets out the background to Amerindian land tenure, outlines the strategy for enabling villages to choose whether or not to opt in to REDD+, and lays out information on outstanding Amerindian land issues.

Amerindian Ownership of Land

Shortly after Guyana acquired independence in 1966, the Amerindian Lands Commission was established with the goal of recognizing Amerindians' right to communal land ownership. The Amerindian Lands Commission Report of 1969 offered a number of recommendations for granting land titles to identified communities that existed prior to 1966. In 1976, the 1951 Amerindian Act was amended to provide for the granting of titles to 64 Amerindian communities. In 1991, 10 other villages were titled, bringing the total of titled villages to 74, approximately 6% of Guyana's territory.

All 74 titled villages were bound by natural boundaries, and the outcome of the initial titling efforts did not provide closure on issues of Amerindian land claims. Furthermore, the Amerindian Act under which the lands were granted was considered to be defective because it provided the Minister and Chief Officer with extensive powers to reduce and confiscate lands granted and occupied by Amerindians.

To address this, from 1992, the Government sought to reform the constitutional and legislative framework for Amerindian land ownership, and in 1995, agreement was reached with the Amerindian Tshaos (village heads), where-by a two-prong approach for addressing land claims was formulated:

- Demarcation of the existing 74 titled Amerindian villages
- Addressing the request for titles by communities without titled lands and examination of extensions requested by titled villages

This laid the basis for the development of a land titling, demarcation and execution programme. As a result, the total number of titled Amerindian villages is now 96.

In parallel, the policy framework was reformed and culminated in the Amerindian Act # 6 of 2006 which was formulated out of extensive community consultations with Amerindian villages. This act made provision for matters of land management, allocation, leasing, titling, demarcation and extension. Titles are now issued in different forms – Amerindian Villages, Amerindian Areas and Amerindian Districts.

The Act provides the Village Council with functions to hold for the benefit and use of the village "all rights, titles and interest in or over village lands and to manage and regulate the use of and occupation of village lands." Ownership of land is communal. Villages decide on how much land

will be used for mining, forestry and hunting, and residential occupancy. The law also allows Village Councils to lease community lands up to 10% of the titled area owned. Each Village elects a Toshao to represent the village, all Toshaos meet together as part of a National Toshaos Council, and they elect a Chairperson to represent the Council.

“Opt In” for Indigenous Communities

In its current form, the calculation of Guyana’s EVN and corresponding structuring of incentives is based on the forest services provided by Guyana’s State Forest Estate (SFE), and excludes forest lands under Amerindian jurisdiction.

Over the next few years, Amerindian villages will have a choice of whether to enter a REDD+ agreement (side-by-side with the State Forest Estate) and, assuming continuing adherence to the agreement, receive a pro rata share of forest compensation payments. The decision to participate will likely be based on whether participation will lead to improved access to opportunities and services for forest-dependent communities. Communities will be asked to propose priority improvement opportunities, such as expansion of social services including health and education, provision of low-carbon energy sources (most villages are not on the national grid so need alternate power sources), and provision of clean water. In addition, previous consultations with forest communities in Guyana have highlighted the importance of providing attractive income-generating opportunities – for example, support to grow and market non-subsistence agriculture products without stimulating deforestation (for example, non-perishable spices) and help to develop community-based ecotourism offerings. When communities decide to opt in, they will need to determine what, if any, action they wish to take on the use of traditional rotational farming methods. This has been the subject of significant debate within the UNFCCC, and the Government of Guyana supports the view that these practices should be allowed to continue; however, it will be necessary to integrate this policy position with guidance that is given by the wider UNFCCC process.

Based on proposals from some representatives of Amerindian communities during the preparation of this document, some payments might flow directly to individual villages that opt in, and the balance would fund a broader Amerindian Development Fund, which would be a grant-based program where indigenous groups (not just those who live in the forest) could apply for funds for development programs (possibly similar to the Brazilian Amazon Fund). As communities “opt in”, payments will be made pro rata into the Amerindian Development Fund.

In accordance with the Amerindian Act and international norms, consultations have started to enable the participation of communities. Further, more detailed consultations will take place and, if communities choose to participate in REDD+, their lands will be included in the overall strategy. There is no deadline for communities to “opt in” to the international payments regime, but initial work will start in 2010 – further details are set out in Section 9.

While this will be a reasonably straight-forward process for titled villages, it does not deal with the issue of land that remains untitled, un-demarcated or where communities are awaiting decisions on extensions.

Outstanding Issues with Amerindian Land

Exhibit 6 provides a summary of the status of all Amerindian land, with Appendix V listing the villages, settlements and communities in each category.

Titled Villages. There are 96 currently titled Amerindian villages, with 36 satellite villages. (satellite villages are managed by an elected Senior Councillor).

Outstanding Demarcation Of the 96 titled villages, 70 are demarcated and 6 are bounded by natural boundaries. The remainder are free to request demarcation. Demarcation is processed by the Ministry of Amerindian Affairs in accordance with the processes set out in Appendix V. Appendix V also lists all villages that have been demarcated, those for whom demarcation is in process, and those that are not yet demarcated. 7 of these villages are in Region 7 and have not agreed for the village lands to be demarcated. The Ministry of Amerindian Affairs is constrained by a pending Court matter from addressing land issues concerning these 7 villages.

Untitled Amerindian Communities. There are 11 Amerindian communities that are eligible for titling and 6 of these have submitted applications for grant of state land. These applications are under review and the consultation processes are scheduled.

Lands Awaiting Extension. 8 villages have received approval for extension, 27 villages awaiting processing for extension.

Amerindian Settlements. These are 20 settlements consisting of mainly Amerindian residents. They are not yet eligible to apply for community status, but will likely qualify for titling at various times in the future.

In 2010, work will start to address the resolution of all outstanding titling, demarcation and extension, with the goal of completing these processes for those villages that request this by 2015. Further details are set out in Section 9.

Exhibit 6 – Status of Amerindian Land

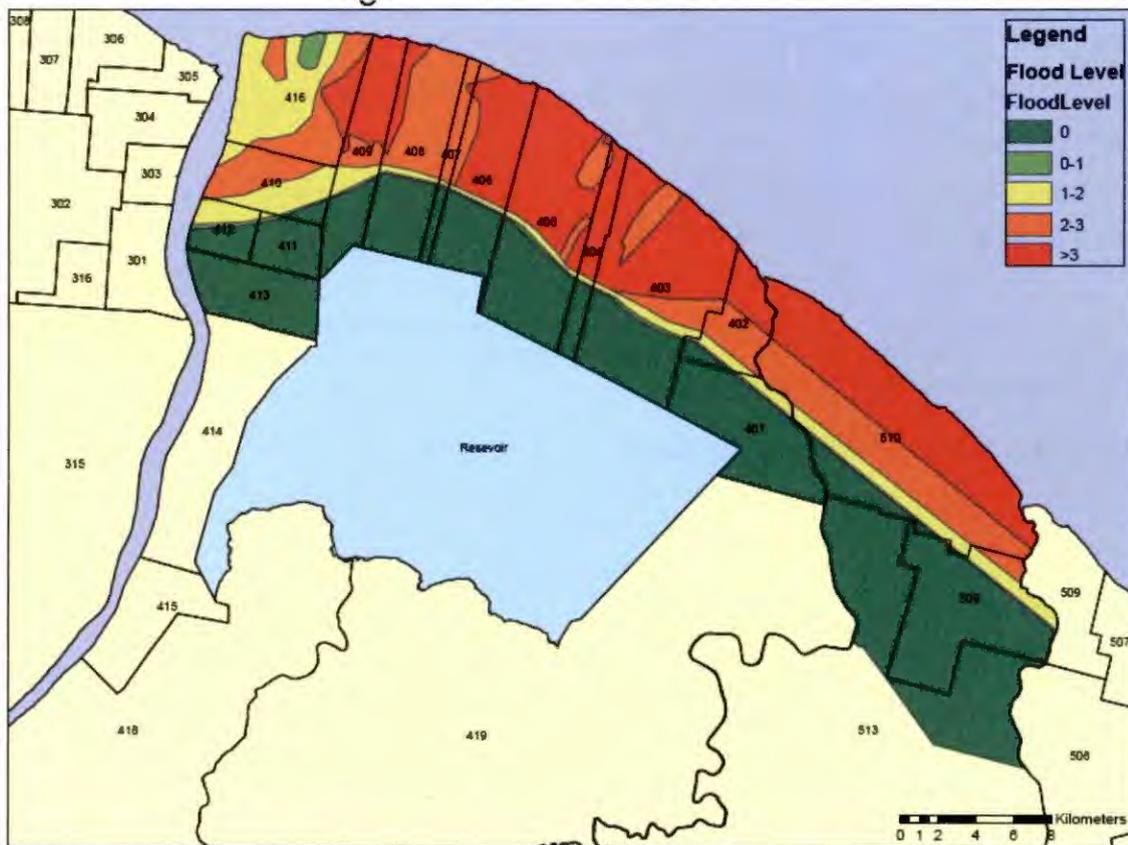
	Totals	Demarcated			Extension	
		Demarcated	In progress	Awaiting Demarcation	Extended	For Processing
Titled Villages	96	70	5	21	8	27
Untitled Villages	11					
Settlement	19	Established before 2003 and will become eligible for title in the future at various times				
Mixed Communities	9	Communities with significant number of Amerindian population (not exhaustive)				

5. Protecting Guyana's people and productive land

Guyana's coastal regions, including Georgetown, lie below sea level, and a large part of Guyana's population (39 percent of its population and 43 percent of its GDP) live in regions exposed to significant flooding risk. As such, flooding is a major adaptation challenge for Guyana.

By 2030, the annual loss due to flooding in Guyana is projected to be US\$150 million. This at-risk value has been estimated by using flood maps that combine an assessment of flood risk, population density, and economic activity. Additionally, an extreme event similar to the serious flooding in 2005, which resulted in losses equivalent to 60 percent of GDP, could result in some US\$0.8 billion in losses and harm to more than 320,000 people. Given these potential losses, investing in the most beneficial adaptation measures would significantly increase estimated national income in Guyana, and would likely be essential to attracting investors.

Exhibit 7: Indicative flood map of Georgetown



Total adaptation costs for Guyana are projected to exceed US\$1 billion at the national level. While all of these adaptation needs must eventually be met, the Office of the President has identified a portfolio of urgent, near-term investments in the highest priority areas where the population and economic activity are concentrated. These are detailed in Section 9, and include:

- **Upgrading infrastructure and assets to protect against flooding through urgent, near-term measures (US\$225 million)**

- **Hinterland Adaptation Measures** (US\$10 million)
- **Addressing systematic and behavioural concerns**(US\$33 million)
- **Developing innovative financial risk management and insurance measures to resiliency** (US\$10 million).
- **Switching to flood resistant crops** (US\$10 million).

In addition to these urgent near-term measures, an additional US\$500 million to \$600 million of long-term adaptation measures have been identified including: upgrading the Conservancy to recognized engineered standards (US\$410 million); expanding beyond the priority regions in upgrading the seawall (US\$15 million to \$60 million); and expanding the drainage and irrigation program (US\$30 million to \$119 million).

When the first and second drafts of the Low Carbon Development Strategy were prepared, Guyana was advocating for a REDD+ mechanism to be agreed at the Copenhagen meeting of the UNFCCC. If this was of sufficient scale, Guyana had suggested that it would be able to use forest payments to invest in Adaptation needs. Given the actual outcome at Copenhagen, Adaptation needs will, in the short term, be addressed through the Fast Start Funding and 2013-2020 Funding components of the Copenhagen Accord.

Therefore, Guyana will in 2010 prepare a comprehensive Priority Adaptation Plan³⁷ to address the most urgent issues outlined above during the period 2010-2015. Further details are set out in Section 9.

³⁷ This will form part of Guyana's National Adaptation Programme of Action (NAPA) within the UNFCCC process.

6. Implementing the Low Carbon Development Strategy

Developing Required Capabilities

To ensure successful execution of the Low-Carbon Development Strategy, Guyana is developing five new or enhanced institutional capabilities:

1. An Office of Climate Change (OCC) consolidates and streamlines Government efforts on climate change, including the co-ordination of engagement with multilateral processes and UNFCCC negotiations.
2. A Low Carbon Strategy Project Management Office (PMO) has been established to drive key projects as part of the Low-Carbon Development Strategy.
3. A Guyana REDD Investment Fund (GRIF) is being established to manage forest payments, to reduce the cost of capital on other essential investments, and over the long-term to act as a permanent investment fund for low carbon investments.
4. A strengthened Environmental Protection Agency will ensure that social and environmental safeguards are applied to the appropriate internationally recognized standards for all GRIF investments.
5. The REDD Secretariat at the Guyana Forestry Commission will be the implementing agency for implementing "REDD readiness" activities, including the development and implementation of a monitoring, reporting and verification system.

1. Office of Climate Change

An Office of Climate Change has been established within the Office of the President to work across Government to support work on climate adaptation, mitigation and forest conservation. It serves to bring together and align efforts that are already underway and to co-ordinate efforts by multilateral and non-governmental organizations assisting Guyana's climate change agenda.

The OCC is the entity with overall coordinating responsibility for ongoing national consultations on Guyana's Low-Carbon Development Strategy and related stakeholder engagement processes, working closely with the REDD Secretariat in the Guyana Forestry Commission.

The OCC also supports Guyana's National Climate Committee, the Guyana Geology and Mines Commission, the Environmental Protection Agency, and the Guyana Lands and Surveys Commission. It will ensure coordination with international forestry programs such as the World Bank's Forest Carbon Partnership Fund (FCPF), the Forestry Investment Program (FIP), and the United Nations' UN-REDD program. It also works closely with Guyana-based and international non-governmental organizations such as Conservation International, World Wildlife Fund for Nature, and Iwokrama. Except for its own operating costs, the OCC does not have any responsibility for REDD+ or other finances.

The OCC will also work closely with the Ministry of Amerindian Affairs and individual villages to determine how the "opt in" process for Amerindian villages will proceed, as well as how REDD+ Benefit Sharing mechanisms will be implemented.

2. Low Carbon Strategy Project Management Office

Reporting directly to the President, the PMO was launched in the third quarter of 2009, and will serve to attract high-caliber, experienced managers into project management positions to drive the most critical elements of the Low-Carbon Development Strategy. Its focus is on coordinating public and private agencies to accelerate the implementation of a limited number of critical projects, including hydropower and priority adaptation measures, and working alongside the Guyana Office for Investment (GO-Invest), to attract sector-leading investments in low-carbon economic sectors.

To build local management capacity, the PMO will recruit locally, and over time the PMO will transfer certain programs to other government agencies.

When executing on specific projects targeting sector investments, the PMO will provide significant support for GO-Invest to strengthen Guyana's current investment capabilities. While investor interest exists, Guyana's investment promotion system does not have the resources needed to reach the number of new additional investors envisaged. It needs further strengthening to convert leads and streamline inter-agency approval processes. Specifically, the PMO will work with GO-Invest to streamline operational procedures, in particular those that are customer facing. This will enable GO-Invest to convert a larger number of investment inquiries into actual investments, thereby increasing domestic and foreign investment, jobs and economic growth.

3. Guyana REDD Investment Fund

Guyana is establishing the Guyana REDD+ Investment Fund (GRIF)³⁸, with the Ministry of Finance responsible for its performance. To support the Ministry and enable integration with global fiduciary, social and environmental standards, GRIF will be operated by a reputable international organization, who will invest GRIF revenues on Guyana's behalf. Over time, GRIF will become comparable to a sovereign wealth fund, making priority low carbon development investments in accordance with four functions:

Managing and Monitoring Forestry Payments. GRIF will channel results-based REDD-plus funds, initially from Norway, and later from other contributors, to the implementation of the LCDS. In order to ensure appropriate internationally recognized fiduciary, social and environmental standards, the safeguards and operational policies of GRIF's operator will apply as appropriate to all activities to be financed by the GRIF – this objective will be achieved through joint efforts by the operator of GRIF, the Ministry of Finance and the Environmental Protection Agency. In time, GRIF might interface with a new international tropical forest funding agency or a global climate finance fund.

Attracting Low-Carbon Investment to Guyana. Aside from the relatively small size of the local market, potential investors are concerned about the lack of investment infrastructure in Guyana, the relatively few investors that have already invested at scale, and other perceived risks. As a consequence, interested foreign investors tend to demand excessively high investment returns. The GRIF will seek to address these barriers and help improve investment returns. Due to lack of world-class investment promotion capability in Guyana, this will likely require a reputable

³⁸ Note in the first draft of the LCDS, this entity was called the Guyana Low Carbon Financing Authority

international services provider in the near term. At a later point, the GRIF will build its own staff capability, starting with three to five professionals and ramping up staffing as needed.

Distributing REDD-plus funds. In accordance with a project pipeline derived from the LCDS, funds will be disbursed to the relevant public or private implementing agencies for approved projects. The method for approving and disbursing projects adhere to Guyana's national legal framework, and the fiduciary and operational policies of the international organization operating the GRIF.

Implementing Benefit Sharing Arrangements for Indigenous Lands and Impacted Workers. REDD+ payments will be distributed pro rata for the benefit of Amerindian villages that choose to opt in to REDD+. The method for operating this (whether through a separate Amerindian Development Fund, or through the use of existing mechanisms) will be determined once the GRIF is established. REDD+ payments may also be made in certain circumstances to compensate those whose present livelihoods will be affected negatively by verified emissions reductions. Particular attention will be given to the methodology for livelihood improvements for displaced forest workers, such as miners. However, the Government does not intend to share REDD+ "profits" with large concessionaires – they will be allowed to continue with their operations in accordance with the law but will have no rights to trade in emissions credits.

4. Environmental Protection Agency

The Government of Guyana has stated that the incorporation of robust social and environmental safeguards into a global REDD+ agreement is essential. To assist in the international community's efforts to determine the best way to ensure that these are to a globally agreed standard, Guyana stated that safeguards needed to be a core component of the country's REDD+ model. During the period 2010 – 2015, Guyana intends to strengthen the Environmental Protection Agency to ensure that national systems for safeguards operate to whatever global standards emerge, and to assist in shaping them where possible. To assist in this process, the EPA will work with the operator of GRIF to ensure adherence to the operator's standards, and then to update national standards and systems where necessary.

5. REDD Secretariat

Guyana's LCDS and REDD+ work are under-pinned by the Readiness Preparation Proposal (R-PP) for the FCPF process, which is the chosen multilateral route for preparing for REDD+. Guyana's R-PP was the first in the world to be approved, and the Guyana Forestry Commission is the focal point agency responsible for liaising with the FCPF on readiness activities.

The REDD Secretariat will work with a neutral expert selected by Guyana and Norway to determine the forest payments earned by Guyana every year, which will provide the basis for first forest payments to Guyana. Over time, the MRV System outlined in Appendix VI will be progressively implemented by the REDD Secretariat, and adhere to international guidelines for estimating and reporting carbon emissions and removals.

The REDD Secretariat will also support work across government and the relevant industry sectors to consult on, and produce the REDD+ Governance Development Plan outlined in Section 3.

7. Ensuring support from stakeholders through a National Consultation process

The long-term success of Guyana's Low-Carbon Development Strategy is ultimately dependent not only on the international partnership outlined in Section 2 but also on broad-based, inclusive domestic support within Guyana. Implementing the LCDS represents a transformation of Guyana's economy and, therefore, receiving support for the LCDS from the people of Guyana and their representatives has to be done at a pace which enables the commitment of Guyana's international partners to be made visible to the people of Guyana.

This document is the third draft of Guyana's Low Carbon Development Strategy. The first draft was based on Guyana's updated proposal on avoided deforestation³⁹ which was outlined by President Jagdeo in Georgetown in December 2008. At that time, the overall principles of the LCDS were articulated, and the need for broad-based national consultation emphasized. The first draft of the LCDS was published by the Office of the President in May 2009, and draws on input from previous consultations on climate change, indigenous peoples' rights and national development.⁴⁰

Consultation on the first draft took place in June, July, August and September 2009, along with awareness and outreach activities utilizing the local media and internet. The consultation was coordinated by the Office of Climate Change, and overseen by a Multi-Stakeholder Steering Committee. At the request of the Government of Guyana, the Government of Norway engaged the International Institute for Environment and Development (IIED) to provide independent advice to assist the consultation process. Their report is available on the LCDS website.⁴¹

In October and November 2009, the second draft of the LCDS was prepared, to incorporate (i) input from the national consultation; (ii) details of the Guyana-Norway partnership; (iii) updates from international progress, including the IWG-IFR and the latest expectations of the Copenhagen meeting of the UNFCCC. This draft was released for a further three-month review period, with the Multi-Stakeholder Steering Committee and the National Assembly initiating this review in the first half of December 2009.

Based on this review, the outcome of the Copenhagen meeting of the UNFCCC and other international processes, the draft was further updated and now contains further recommendations on the next steps in Guyana's potential engagement with REDD+.

Consultative Process on Draft of LCDS

The IIED was given a remit to track the preliminary round of the LCDS consultations during Phase I – Launching the LCDS (2009).

39 <http://gina.gov.gy/booklet%20on%20avoided%20deforestationf.pdf>

40 National Competitiveness Strategy, Amerindian Act, National Development Strategy, add in the others from our reference notes

41 <http://www.lcds.gov.gy/images/stories/Documents/Review%20of%20Guyana%20LCDS%20Consultation%20Process.pdf>

Firstly, a conceptual framework for the consultations was developed and agreed. This document was publicly posted on the LCDS website⁴². The aim was to keep the stakeholder consultation framework simple, practical and flexible; with its objectives set in a way that would meet with international standards of good practice and simultaneously be nationally appropriate.

According to the IIED: "The Independent Monitoring Team finds that the process of multi-stakeholder consultation surrounding Guyana's LCDS has broadly followed principles derived from international best practice and has met these criteria. It is the opinion of this team that the consultative process, to the extent that its findings inform a revised LCDS, can be considered credible, transparent and inclusive. The Government's commitment to transparency and accountability has been commendable during the preliminary consultation process of the LCDS and it is hoped that the openness and inclusivity with which this first phase is proceeding will be strengthened and continued in the ongoing phases of its development and implementation."

The IIED noted both strengths and limitations in the national consultation process, and these are laid out in detail in the IIED document that is on the LCDS website.

Building on their recommendations, implementation of the LCDS will include further consultation. Based on the national consultation, Section 9 outlines the seven key priorities for investments from forest payments in 2010 and 2011, with outline areas for investment in 2012-2015. It also outlines the eighth overall priority – Adaptation measures. These priorities are being incorporated into the National Budget, will come under the oversight of the National Assembly and its economic committees. Each of the individual items will be the focus of ongoing consultation, for example, consultation on economic development options within Amerindian Villages. Further discussion of the consultative process will therefore take place on the specific items, with the Multi-Stakeholder Steering Committee continuing to provide overall guidance and strategic direction.

If the UNFCCC process makes further progress on the incorporation of a REDD+ mechanism, this too will lead to further national consultation.

⁴² http://www.lcds.gov.gy/images/stories/Documents/conceptual_framework.pdf

8. Towards participating in REDD+: Framing the Choice

It is now over three years since the President of Guyana first proposed that the people of Guyana might be willing to participate in the fight against climate change by placing almost the entirety of Guyana's forest under long term protection. He said then that this would only be done providing the people's sovereignty over the forest was not affected, and if their legitimate development aspirations were protected.

Since then, a combination of technical analysis, multi-stakeholder consultation and international developments have made clearer the conditions under which long-term forest protection might align Guyana's national interests with global needs:

- In the coming year, it is possible that a group of countries will agree to set up Interim Financing for REDD+. If this happens, Guyana will be presented with a choice to protect the country's forest through participation in an Interim REDD+ arrangement.
- Over the coming two to three years, the detailed definition of a longer term REDD+ mechanism may become clearer as the UNFCCC processes advance, and this will enable Guyana to choose whether to participate in this mechanism.

As stated in Section 2, participation in REDD+, whether for an interim period or for the long-term, should only be endorsed if it generates both a willingness to participate from Guyana, and a willingness to pay from international partners. Section 2 outlined a potential working example for REDD+ in Guyana, and laid out eight tests against which to assess it:

Willingness to Participate Forest countries are unlikely to choose to participate in REDD+ unless it is a positive development option, which passes four tests:

- REDD+ places a value on a country's forest that can out-compete EVN over a reasonable time-frame
- predictable REDD+ funds are available to pay for a county's performance against emissions targets
- REDD+ does not entail an excessive transaction cost or administrative burden for domestic stakeholders
- REDD+ has the support of the population, especially those who live in or depend on the forest

Willingness to Pay Those who would pay for REDD+ (whether from international public or private sources) need to assess REDD+ against a different set of tests:

- REDD+ must pay for actual emissions reductions, i.e. the cumulative global forest-based reductions must be additional, permanent and avoid national and international leakage.
- REDD+ must involve limited, time-bound international public funding and / or a supply of credits from carbon markets that increases for a period, and then decreases in line with global emissions reductions targets.
- the use of REDD+ funds must meet appropriate international norms for fiduciary, social and environmental safeguards.

- REDD+ funds should be invested in activities that are compatible with broader low carbon development.

Both sets of tests are assessed against an illustrative model below.

Assessing Willingness to Participate

Out-competing EVN In December 2008, Guyana concluded that the EVN of the State Forest Estate equated to an annuity whose most likely value was US\$580 million per year. If REDD+ is to out-compete this valuation over time, it needs to place a valuation on the forest (known as EVN_{REDD+}) which is in excess of EVN.

This starts to change the economic incentives so that it is less economically rational to deforest than it would be without REDD+. Moreover, EVN_{REDD+} will likely increase in value once the interim carbon stock per hectare is replaced with a value that has been determined through IPCC-compliant MRV systems.

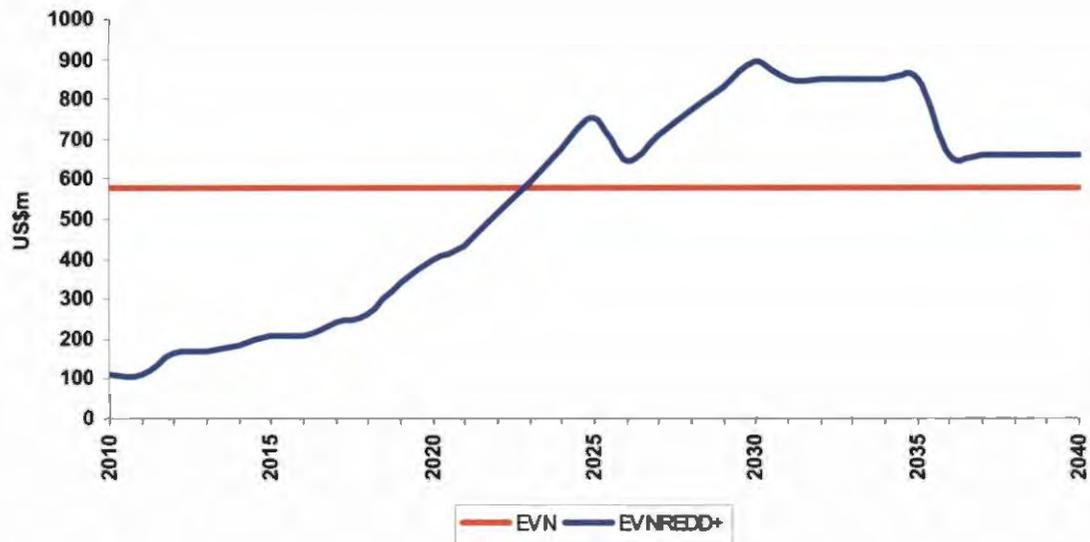
In order to start framing the choices around long-term participation in REDD+ (i.e. beyond 2013 when the first commitment period of the Kyoto Protocol expires), it will be necessary for EVN_{REDD+} to increase towards EVN. Exhibit 8 outlines an example of a model, which is compatible with the current interim definition of REDD+ being used in the Guyana-Norway partnership, whereby EVN_{REDD+} could out-compete EVN by the early 2020s under the following illustrative assumptions:

- A REDD+ agreement is adopted under the UNFCCC, and reference levels are set using the "combined incentive" methodology.
- Global targets for emissions reductions from deforestation and forest degradation are met – achieving 25% reductions by 2015, 50% by 2020, and the gross rate for deforestation and forest degradation is reduced to 0.15% by 2030⁴³.
- By 2015, Guyana has implemented an IPCC-compliant MRVS, and this shows that Guyana has carbon stocks of 150tC/ha on average in the State Forest Estate (SFE).
- REDD+ payments start in 2010, with an entirely fund-based approach that generates "REDD Credits" that are not tradable in carbon markets.
- From 2013, Guyana is assigned an increasing number (broadly in line with the trajectory outlined in the UK's Eliasch Review) of REDD Credits to trade in global carbon markets. These gradually replace the fund-based REDD Credits.
- Fund-based credits are valued at US\$5. These prices are guaranteed.
- The carbon price for market-based credits fluctuates with the global market price. The model assumes a gradually increasing market price, whereby a credit trades for US\$20 in 2015, US\$40 in 2020 and US\$45 in 2030.

⁴³ enabling the achievement of a net zero rate by afforestation and reforestation in parts of the world where this is reasonable, does not damage intact forests, and achieves global carbon neutrality from the forestry sector

Exhibit 10 shows how under these illustrative assumptions, EVN_{REDD+} out-competes EVN by 2023.

Exhibit 10 – Out-competing EVN



Availability of Funds. While the scenario outlined above clearly generates significant value for the world, and might meet Guyana's needs to out-compete EVN within a reasonable time frame, this would only be the case if predictable, long-term finance is available to pay for this value. This will entail:

- establishment of an Interim REDD+ Partnership, which generates funding to pay for Guyana's forest climate services. Guyana believes that this can be done through the implementation of the recommendations of the IWG-IFR and the establishment of an international fund costing Euro 15 – 25 billion for the period 2010 – 2015. This is within the range of the commitments made in the Copenhagen Accord for both Fast Start Funding and 2013-2020 Financing. Guyana is likely to be able to sell forest climate services valued at a total of between US\$350 million and US\$500 million during this period, of which the existing arrangement with Norway is likely to pay for US\$250 million worth of avoided emissions.
- agreement by the UNFCCC (under the Mexican or South African Presidencies) to create both a fund-based mechanism, lasting up to 15 years, and gradual market access for REDD+ credits.
- agreement to provide financing for Adaptation needs, In the absence of a UNFCCC REDD+ mechanism, Guyana will seek to make just over US\$300 million in Adaptation investments over the period 2010-2015, drawing on the Fast Start Funding and 2013-2020 Financing commitments in the Copenhagen Accord.

REDD+ transaction cost and administrative burden Participation in REDD+ will cease to be a rational choice if it entails an excessive bureaucratic burden. Guyana's interface with the REDD+ international system will be through the GRIF. Therefore, assessment against this test is not yet possible. However in selecting the operator of GRIF, Guyana is seeking to ensure that the operator is able to function in a streamlined manner that balances the need for management efficiency with the need for appropriate oversight and supervision.

Support of the people of the country. The four-month consultation process which took place on the first draft of the LCDS in 2009, and the review process on the second draft, showed a high level of support for taking the initial steps to engage with REDD+. However, this support is not qualified. For this reason, the components of the LCDS will continue to be subject to national multi-stakeholder consultation as the individual investments for the period 2010-2015 are designed in more detail. The Multi-Stakeholder Steering Committee and the National Assembly will be asked to endorse engagement with a UNFCCC REDD+ mechanism if one emerges.

Assessing Willingness to Pay

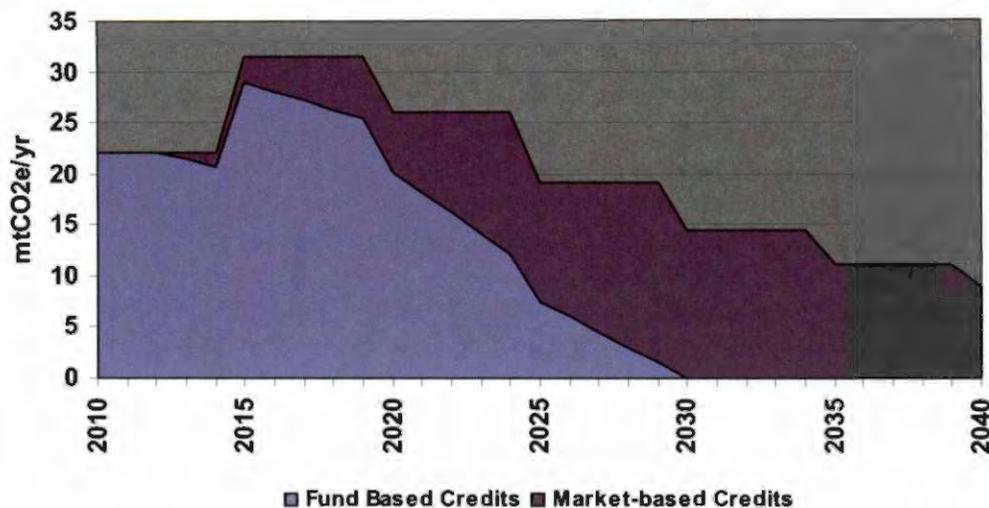
Ensuring Additionality and Permanence, and Avoiding National and International Leakage

If REDD+ is advanced utilizing the combined reference level or compatible methodologies, it will ensure global *additionality* while encouraging the participation of all forest countries. Measures to ensure *permanence* were not looked at to date, and will require further work in 2010. Guyana's REDD+ model is the first national-scale working example in the world, so by definition, deals with *national leakage*. It addresses *international leakage* by seeking to inform the design of international mechanisms to balance the need for incentives across different types of forest countries (most specifically by providing insights for historically high deforesters).

Limited, time-bound international public funding and / or a supply of credits from carbon markets that increases for a period, and then decreases. As shown in Exhibit 10, the illustrative model in Section 2 seeks to ensure that scarce international climate financing is deployed efficiently. Exhibit 10 shows that, although the value to Guyana overall increases:

- international fund-based mechanisms are time limited (peaking in 2015);
- the carbon market value to Guyana is sustained by an increasing price and a decreasing supply of REDD+ credits (a shrinking baseline) in line with global emissions reductions targets, and
- the size of the carbon market is compatible with the likely necessary size of global carbon markets in the future.

Exhibit 11 – Phased Approach to Guyana’s REDD+ Credits



The use of REDD+ funds must meet appropriate international norms for fiduciary, social and environmental safeguards. The operator of GRIF will be responsible for ensuring that Guyana's REDD+ efforts adhere to safeguards and operational procedures as appropriate. It is not yet possible to assess progress against this test but in selecting the operator, ability to apply appropriate safeguards is one of the most important selection criteria.

REDD+ funds should be invested in activities that are compatible with broader low carbon development As set out in this document, the need to balance national development in forest countries with low carbon development has been the central objective of Guyana's approach to REDD+ from the start.

Making the Choice on REDD+

In summary, progress towards meeting all eight tests for participation in REDD+ is still ongoing, and to a degree progress against each depends on progress against the others. Guyana and Norway's partnership will generate significant funds to enable Guyana to get started with participation in REDD+. However, the partnership notes the need for further partners to contribute to the forest payments if it is to be successful over the period 2010-2015.

Committing the State Forest Estate to Interim REDD+ In the continued absence of a full-scale international framework to deliver incentives for forest conservation, the Government of Guyana believes that it is right to endorse Guyana's participation in an interim REDD+ arrangement for the period 2010 – 2015 if the following conditions are met:

- There is international agreement to support the proposals of the Informal Working Group on Interim Financing for REDD+ (IWG-IFR) for the period 2010-2015 in line with the performance-based methodology set out in Appendix 1– OR – a group of bilateral partners agree to work with Guyana to generate the same scale of predictable resources for the period 2010-2015. In either case, the partnership with Norway will be part of this interim arrangement.

- GRIF is set up, and it is the view of the Government and the Multi-Stakeholder Steering Committee that the fund is being administered appropriately by whichever international institution is chosen by Guyana and Norway.
- the financial resources that have been approved by the Forest Carbon Partnership Fund (FCPF) are released in order to carry out essential activities that are necessary to support the implementation of the LCDS, as set out in the RPP.
- the Government concludes that UNFCCC processes are on track post-Copenhagen to include REDD+ in a long-term climate regime.
- pending the inclusion of a REDD+ mechanism in a long-term climate regime, Adaptation funding is made available in line with the Fast Start Funding and 2013-2020 Financing commitments in the Copenhagen Accord.

Including Amerindian Lands in Interim REDD+ The Government will agree to act on behalf of indigenous communities and place indigenous lands within the interim REDD+ framework if individual communities with titled lands decide that they wish to participate. As set out in Section 4, no deadline will be set for when communities choose to "opt in".

Committing to REDD+ beyond 2015 As soon as the UNFCCC process defines REDD+ with sufficient clarity to commit to an arrangement beyond the expiry of the first commitment period of the Kyoto Protocol (2013), the Government will integrate that definition into its assessment of REDD+, to replace the illustrative model outlined above. This LCDS will be updated at that point for further review and consultation.

Immediate Next Steps

It is clear that along with its strategic partners, Guyana is moving from vision to action to demonstrate the effectiveness of providing economic incentives to reduce deforestation and forest degradation. Guyana has set out a practical, replicable model of how to advance the process to protect the forests of the world, reduce greenhouse gas emissions and provide a sustainable path for economic development and improved standards of living.

Guyana has set out the conditions under which it would be prepared to participate in an Interim REDD+ partnership until 2015, and in a long term UNFCCC arrangement after that. Those conditions are not yet in place. However, given the world's urgent need for scaleable, replicable models and lessons about REDD+, climate finance, adaptation and broader low carbon development, Guyana is prepared to continue its work. Section 9 sets out the priorities for 2010 and 2011, and the outline work for the period 2012-2015.

9. Starting to forge a new economy: Interim REDD+ (2010-2015)

As stated in the previous section, the long-term conditions for Guyana's participation in any UNFCCC REDD+ mechanism are not yet in place. However, sufficient potential payments are almost in place to give assurances that Guyana can use Interim REDD+ payments to accelerate the re-orientation of its economy onto a low deforestation, low carbon, climate resilient trajectory during the period from 2010 to 2015.

The following sections outline:

- how Interim REDD+ payments due to Guyana will be calculated in 2010
- investment plans for Interim REDD+ payments in 2010 and 2011
- outline investment priorities for Interim REDD+ payments from 2012-2015
- plans for priority adaptation measures investment portfolio for the period 2010-2015

Calculating REDD+ Payments

Guyana has worked with the Government of Norway to create a detailed methodology to calculate how Guyana will be paid for results achieved in avoiding forest-based emissions of carbon dioxide and other greenhouse gas emissions. Guyana is likely to earn payments of between US\$350 million and US\$500 million for the period to end-2015⁴⁴. Norway has stated its intention to pay US\$250 million of these payments.

In the short term, Guyana has advocated that payments for REDD+ need to be based partly on success in limiting greenhouse gas emissions from deforestation and forest degradation, and partly on progress towards establishing institutions and practices to strengthen Guyana's ability to reduce deforestation and forest degradation. These are set out in Guyana's REDD-plus governance development plan (RGDP). As a UNFCCC compliance grade capability for monitoring, reporting and verifying (MRV) emissions is established in Guyana, this will enable results to be measured objectively in accordance with the rules and policies of the UNFCCC. Until these rules and policies are in place, payments will be determined in accordance with the parameters set out in Appendix I.

Based on this methodology, in 2010, payments will be calculated as set out in Table 1, which shows how the major part of Guyana's forest area falls into three categories – the State Forest Estate, Amerindian Forests and the Iwokrama Reserve.

State Forest Estate In this year's National Budget, the Minister of Finance announced the establishment of the Guyana REDD+ Investment Fund, (GRIF), to administer all funds due for the climate services provided by the State Forest Estate. A total of US\$30 million in GRIF revenue is currently programmed in the 2010 National Budget, although this year's revenues may be up to US\$36 million.

Amerindian Forests Placing the State Forest Estate in an Interim REDD+ scheme will pave the way for the next stage of the development of the LCDS and Interim REDD+: determining over the coming years whether and how Amerindian lands might be included in the overall forest protection scheme. During initial information and dissemination activities on the LCDS in 2009, it was emphasized that Amerindian villages would have the option to choose whether and how to opt into the Interim REDD+ scheme up until the end of 2015, in accordance with the principles of

⁴⁴ This excludes revenues that emerge under a UNFCCC mechanism.

free, prior and informed consent. It was also emphasized that no deadline would be set for when this choice needed to be made, and that Amerindians could choose not to opt in at all. By way of illustration, participation of all villages in Interim+ REDD could generate payments of over US\$8 million⁴⁵.

Iwokrama The Iwokrama Reserve is not included within the Interim REDD+ scheme, as it operates under a separate legislative and operational framework. Iwokrama has been constituted in part to provide a test-bed for innovative financing mechanisms for forest-related services, and will remain free to propose such innovative mechanisms, which may be separate to the national Interim REDD+ scheme. However, the participation of Iwokrama in any greenhouse gas or environmental services payment scheme will only be possible if sanctioned by the Board of Iwokrama and the Government of Guyana.

Table 1: Potential Interim REDD+ Payments in 2010⁴⁶

Forest Location	Area ⁴⁷ (hectares)	Payment Reference Level	Deforestation Rate	Tons CO2e / ha	US\$/t	Interim REDD+ Payments
State Forest Estate (excluding Iwokrama)	12,968,193	0.45%	0.3%	367	5	35,694,951
Iwokrama	371,592	N/A	N/A	N/A	N/A	0
Community (Amerindian) forests. "Maximum Opt-In Scenario" ⁴⁸	3,009,906 ⁴⁹	0.45%	0.3%	367	5	8,284,766
TOTAL	16,349,691					43,979,717

From 2010, all Interim REDD+ payments will be incorporated into the National Budget, and subject to the over-sight of the National Assembly. The payments will be managed through the Guyana REDD Investment Fund (GRIF). In parallel, Guyana will invest adaptation climate financing in priority adaptation measures, drawing on resources provided after the Copenhagen

⁴⁵ This will require further work to determine the exact area of forested land in Amerindian villages. See explanation with Table 1.

⁴⁶ For further details on the calculation methodology, see Appendix 1

⁴⁷ The exact area of Guyana's forests will be confirmed in October 2010. The figures in the table are based on the best currently available data.

⁴⁸ This is based on lands titled in 2009 (the period for which 2010 payments are calculated).

⁴⁹ The exact extent of forested land in Amerindian land is not known – therefore, this figure includes some non-forested land. As individual Villages start the process of "opting in", the extent of forested land in each Village will be calculated, utilizing the MRV system now being implemented.

Accord's agreements to provide Fast Start Funding for the period 2010-2012, and longer term funding from 2013-2020. Once a sufficient UNFCCC REDD+ mechanism is in place, Guyana intends to finance adaptation and non-forestry mitigation investments from REDD+ payments.

Investing Payments in 2010 and 2011

In 2010 and 2011, Interim REDD+ revenue of between US\$60 million and US\$111 million in total will be invested as shown in Table 2. The individual investments are described below.

Table 2: 2010-2011: Indicative Investment Plan (US\$ millions)

	2010		2011	
	Min	Max	Min	Max
Amaila Falls Equity ⁵⁰	19	20	20	35
Amerindian Development Fund	4	8.2	4	12.3 ⁵¹
Amerindian Land Titling	3	3	3	3
Fibre Optic Cable	0	4.5	0	6.5
SME and Vulnerable Groups' Alternative Livelihoods	1.5	3	1.5	5
International Centre for Bio-Diversity Research, Low Carbon Curriculum Development and IT Training	1	2	0	2
MRV and Other Support for LCDS ⁵²	1.5	3.2	1.5	3.7
TOTAL	30	43.9	30	67.9

⁵⁰ A further investment of US\$5 million in Amaila Falls Equity may take place in 2012

⁵¹ This figure is based on 2009 titled villages. If there are more villages titled by the end of 2010 (the period for which 2011 payments are made), this figure will be higher.

⁵² Guyana is also likely to receive further funding to assist in developing Enabling Capabilities from the Forest Carbon Partnership Fund (FCPF). The country may receive up to US\$3.6 million in the coming years. Once there is further clarity on this funding stream, it will be integrated with the Interim REDD payments.

Guyana has also received proposals from Overseas Development agencies for capability development. If these proposals progress, they will also be integrated into this funding stream.

Amaila Falls Equity

The construction of the Amaila Falls Hydro-electricity plant has long been a priority of successive Governments in Guyana. Once complete, this plant will provide a transformational change in the competitiveness of Guyanese businesses, eliminate a key barrier to direct foreign investment, and enable an unprecedented reduction in the cost of electricity for citizens – while simultaneously enabling Guyana to switch from nearly 100% dependence on fossil fuel-based electricity generation to nearly 100% clean, renewable energy supplies.

The 154 MW project will cost approximately US\$ 650 million - funded by a mixture of debt (approximately 70%) and equity (approximately 30%). The equity is being contributed by Sithe Global LLP, an 80% subsidiary of The Blackstone Group of the U.S., and by the Government of Guyana. The tentative debt structure includes lead financing by the Inter-American Development Bank (IADB) and the China Development Bank (CDB)

The project footprint on the rainforest will be less than .001% of the State Forest area, and Guyana's Environmental Protection Agency, working in partnership with the Inter-American Development Bank, will ensure that its development meets both national and international social and environmental safeguard benchmarks. An Environmental Impact Assessment (EIA) completed in 2002 and updated in 2008 revealed no existing occupation in the proposed project area. An amended EIA and Environmental & Social Management Plan is being prepared by Sithe Global to cover the final project scope. The project will work closely with local and international Non-Governmental Organisation's such as Conservation International to ensure exacting environmental, social and safety standards. Emphasis and care will be taken to ensure that neighboring communities will benefit from the project's construction.

The project will be supported by a US\$16 million access road and partial transmission right-of-way clearing, to be paid for as part of the Government of Guyana's contribution to the project. Construction of the road will precede the main hydro project and transmission line project in order to reduce the larger project construction time and improve the economics of the deal structure, ultimately benefitting the country in reduced electricity tariffs. Construction of the road and right-of-way will comply with country and international social and environmental safeguards.

The project is structured as a 20-year Build-Own-Operate-Transfer (BOOT) arrangement under which Guyana Power and Light (GPL) will purchase 100% of the capacity of the Project under a "take or pay" Power Purchase Agreement (PPA) with the private project sponsor, Sithe Global, LLP. Sithe has formed a special purpose company (Amaila Falls Hydro Inc.) to execute the project and to contract with GPL and the Government of Guyana. After 20 years, the project will be transferred to the Government of Guyana at zero additional charge.

The Government will earmark US\$40 - US\$60 million in LCDS funds that will be used to take-out the Sithe's equity, and by extension, reduce the annual "take or pay" payment to Amaila Falls Hydro Inc. Under the terms of the project, the Government has the right but not the obligation to substitute Sithe's high-cost equity with LCDS funds. Once the plant is operational, future Governments may exercise the option to sell the Government's equity stake to private investors.

Completing the hydro project and transmission line is scheduled to take 40 months with Commercial Operation Date (COD) tentatively scheduled for 1st Quarter 2014. Principal construction of the access road and transmission line right-of-way is planned to start in July 2010 and to take eight months for completion.

Amerindian Opt In and Development

Between 2010 and 2015: (i) it is aimed to complete the process of titling (plus the related demarcation and extension processes) for all villages that request this to be done; (ii) all titled Amerindian villages will have the option to "opt in" to the Interim REDD+ mechanism at any time during the period 2010-2015, in accordance with the principle of free, prior and informed consent; (iii) the Amerindian Development Fund will be established to provide grants for low carbon energy and economic or social investments in Amerindian villages.

Amerindian Demarcation and Titling Programme One of the clear messages from the 2009 LCDS consultation in Amerindian areas was the need for further progress on outstanding land issues. As stated in Section 4, since the early 1990s, the share of Guyana's territory owned by Amerindians (who make up approximately 9% of Guyana's population) has increased from approximately 6% to approximately 14%, as lands have been titled, demarcated and extended following requests from Amerindian communities. It is likely that Amerindian territory will eventually expand to about 20% of national territory.

Appendix V sets out the remaining work to complete this process: 96 villages are now titled and 11 remain untitled (Karaiko, Batavia, Tasserene, Kangaruma Kamburu, Tuseneng, 4 miles, Eclipse Falls, Karispuru, , Katoonarib, Riversview) A further 19 settlements are likely to become eligible for title in the future. Of the 96 titled villages, 70 have been demarcated with 26 in progress or awaiting demarcation; 8 have been extended with 27 extension requests being processed. Further details are set out in Appendix V.

Cost has historically been a major impediment to progress: it is estimated that completing demarcation, titling and extension will require over US\$18 million. With Interim REDD+ payments in 2010 and 2011, a total of US\$6 million will be allocated to accelerate the demarcation and titling programme, addressing those villages with currently outstanding requests, and communicating the processes for demarcation and titling to those villages that have not yet chosen to do this. Appendix V sets out a 2010-2015 budget to complete all outstanding work on demarcation and titling, although it will be for individual Villages to decide whether they wish to proceed with this work.

Amerindian Opt In During 2010, discussions will continue on how to develop the opt-in process. The first draft of a paper outlining how the opt-in procedure might work was presented to the LCDS Multi-Stakeholder Steering Committee in March 2010. This paper is now being reviewed by the members of the Steering Committee, including the representatives of indigenous communities. Once the Steering Committee has completed its work, the paper will be circulated for public discussion and finalization among Amerindian villages. The process of opting-in may then start in villages which choose to do this. The Government will act on behalf of indigenous communities and place indigenous lands within the Interim REDD+ framework if individual communities with titled lands decide that they wish to participate.

Once villages start to opt in, those that choose to do so will have access to their share of Interim REDD+ revenues, through a Benefit Sharing Mechanism which will be worked out by the Government and National Toshias Council, in consultation with indigenous leaders and villagers.

Amerindian Development Fund Even if no villages choose to opt in, in 2010 and 2011, at least US\$4 million per year will be made available for local development from revenues that are received for the State Forest Estate.

A Village General Meeting will determine the most feasible projects, with the Village Council taking the lead in preparing proposals and budgets, drawing on guidance from technical officers at the Ministry of Amerindian Affairs. Based on suggestions received during the 2009 consultation, the Amerindian Development Fund is likely to make available grants for (i) enhancing food security (ii) agricultural development (e.g. spice growing, honey and peanut butter production) that does not threaten the forest; (iii) solar panel arrays for local electricity generation, (iv) creation of a digital communications network to enhance communications between forest communities, Georgetown and regional centres and to permit vital Internet access; (v) community-based ecotourism ventures; (vi) purchase of computers and educational programmes for families and students (in co-ordination with the One Laptop Per Family-OLPF initiative described on Page 57)

Initial analysis suggests that the best categories for small business development may be the following:

- **Aquaculture** is most suitable for the North and Central Rupununi (Region 9), Monkey Mountain and Taruka (Region # 8), Mabaruma and Moruca sub-district (Region1), Region 2 and Upper Mazaruni (Region 7).
- **Cattle Rearing and Processing** is most suitable for Region 9 and some villages in Region 8 (Kurukabaru, Itabac, Kanapang, Karisparu). These villages are largely savannah and un-forested.
- **Small Manufacturing and Value-Added Production** Many villages in the North Rupununi have well- developed micro-industries, which can help in the development of similar expertise and offerings in Regions 2,4,5 and 6.
- **Credit Schemes.** The Orealla, Moruca and North Rupununi Credit Scheme and Development Trusts may be expanded and replicated in other clusters of Amerindian communities. Upper Mazaruni Region 7 and Sub District 2 Region 8 have been identified as possible locations for new credit schemes.
- **Ecotourism** Hinterland regions (Regions 1, 7, 8 & 9) have potential viable eco-tourist destinations based on geographical location, land composition, flora and fauna and basic hospitality infrastructure (Village guest house, lodges etc). Amerindian Villages in Regions 2, 3, 4, 5, 6 &10 are viable for community based agro-tourism businesses.

Information and Communications Technology Infrastructure

A corner-stone of Guyana's low carbon development strategy is enabling access to high quality ICT infrastructure in all parts of Guyana. Improving ICT infrastructure is the first step in the Government's efforts to advance the Guyanese society and economy through the deployment and use of technology and a modernized telecommunications sector. Such efforts will also catalyze private sector investment and facilitate Guyana's rapidly-growing Business Process Outsourcing industry to more than double the number of people employed by 2013, and provide the infrastructure that is necessary to connect remote communities to Government and other essential services.

As part of its long-term telecommunications modernisation strategy, the Government has already committed to delivering a new fiber optic system from Brazil to Georgetown and to developing an e-Government network. Phase I of this programme will see fibre optic cable laid from Lethem to Georgetown in 2010 – this will link Guyana to the rest of South America. Phases II and III will see expansion of telecoms services and the wireless broadband infrastructure network along the coast and into hinterland (including forest) villages and communities. These ICT infrastructure investments will be able to provide high speed connectivity to rural inland areas where the existing infrastructure is not present, and remove the digital divide that has been stifling the growth of rural areas.

Once in place, the ICT infrastructure (and in the case of more remote communities, other digital technologies) and the e-Government network will enable the delivery of government services via digital media. In particular, it will improve the delivery of, and access by all citizens to, Government and other public services, including information on government activities and opportunities, public health, education and social development services.

In turn, increased national broadband capacity will enable the implementation of the One Laptop per Family project, which is currently under development. The overall objective will be to deliver 50,000 laptops to families, along with training in their use.

Small and Micro Enterprise Development in Low-Carbon Sectors and Building Alternative Livelihoods for Vulnerable Groups

Forest payments will be invested to support the creation of new low-carbon economic opportunities for small and micro enterprise (SME) sectors and vulnerable groups. This will take the form of grants, a mutual guarantee fund, skills development and capacity building in agencies responsible for SME development and vulnerable groups.

Guyana's Small Business Act of 2004 established a Small Business Development Fund and a Small Business Council, which is the prime agency responsible for the development of the SME sector in Guyana. The secretariat of this Council is the Small Business Bureau, which was allocated funding in the 2010 Government budget and is now operationalised. The Bureau will work closely with agencies responsible for building alternative livelihoods for vulnerable groups, such as the Women's Advisory Bureau, the Rural Women's Network and the Ministry of Agriculture. Monies in this component will be administered through the Small Business Development Fund and will be applied against two fundamental constraints: access to finance and technical and business skills development. The available financing will:

- Provide grants for essential equipment and marketing activities to small and micro businesses in key low-carbon growth sectors and restructuring sectors: for example, fruit and vegetables, aquaculture, sustainable value-added forestry, eco-tourism, and sustainable-model mining;
- Address Guyana's long standing access to finance constraint for SMEs and vulnerable groups by launching a Low Carbon SME Mutual Guarantee Fund. By assuming an adequate but not excessive amount of lending risk, this fund will address a long-term constraint to the development of SMEs and vulnerable groups in Guyana. Banks and

lending associations are reluctant to finance this sector because of the associated risk. The fund will aid the development of SMEs and vulnerable groups in other low carbon sectors, such as energy efficient transportation, printing and publishing, arts and crafts, apiculture, internet and computer based services, low carbon manufacturing, entertainment, music and arts and retail and distribution;

- Provide targeted training in business development, technical skills and sustainability through a targeted system which will give SMEs and vulnerable groups the ability to obtain the relevant business and technical training conducive to their development. The system will ensure appropriate training by allowing low carbon sector SMEs and vulnerable groups to choose the training they require, within a pre-select band, from organizations such as the Small Business Development Finance Trust, Empretec and the Institute for Private Enterprise Development. Training support will also be given to the Guyana National Bureau of Standards so that it can reach out to viable potential SME exporters to ensure that their business practices and products meet the requirements of their target export market; and
- Capacity building in agencies responsible for SME development and building alternative livelihoods for vulnerable groups in low carbon sectors, including the Small Business Bureau. This will be in the management of the mutual guarantee funds, grants, the targeted training system and SME and vulnerable group information systems.

This will be administered by the Small Business Bureau and will support other government sector specific initiatives to promote SME's and vulnerable group participation in the emerging low-carbon economy.

International Centre for Bio-Diversity Research and Low Carbon Development, Curriculum Development and IT Training

Successfully creating a new low carbon economy will require a suite of investments in the Education sector, and in 2010/11, priority will be given to:

- **International Centre for Bio-diversity Research and Low Carbon Development** Guyana's rainforest has some of the richest bio-diversity in the world. Moreover, rainforests currently provide sources for 25% of today's medicines, representing a drugs market of close to US\$100 billion. Guyana will seek to partner with national and international educational, research and commercial establishments to set up an International Centre dedicated to researching (and where possible, deriving economic value from) Guyana's rich bio-diversity. The centre will work with emerging global institutes (e.g the Green Growth Institute) to ensure that Guyana is integrated with international advances in this field. Requests for Proposals will be developed and issued in 2010.
- **Low Carbon Curriculum Development** Long-term buy-in for low carbon development and ongoing discussion and improvement of Guyana's ability to deliver a low carbon future will come about with the mainstreaming of these topics into the long term education system. In 2010, this will involve the Ministry of Education and NCERD working

to enhance the school curriculum, with the goal of introducing on a pilot basis the Low Carbon Development Strategy and Climate Change into the formal education system from September 2010.

- **IT Training.** In support of the enhancement of ICT infrastructure nation-wide, the Government will support measures to improve training of school children and prospective employees. This will be done in conjunction with the One Laptop per Family project described above.

MRV and Other LCDS Supporting Tasks

To ensure successful execution of the Low Carbon Development Strategy, five institutions will be supported and/or strengthened in 2010 and 2011:

1. Office of Climate Change The OCC is the entity with overall co-ordinating responsibility for ongoing national consultations on Guyana's Low Carbon Development Strategy and related stakeholder engagement processes, working closely with the REDD Secretariat in the Guyana Forestry Commission. In 2010 and 2011, the OCC will lead work to:

- design the detailed modalities for the Interim REDD+ scheme, including the implementation of social and environmental safeguards⁵³ to recognized international standards (this will probably involve strengthening other Government organizations, e.g. the Environmental Protection Agency), working alongside international and multi-lateral institutions.
- assist Amerindian villages to determine whether and how to opt in to the Interim REDD+ scheme.
- perform the functions of Secretariat to the LCDS Multi-Stakeholder Steering Committee
- carry out outreach and communications activities concerning the LCDS
- continue to co-ordinate Guyana's international engagements with the UNFCCC and other climate change processes
- co-ordinate the work of the Government of Guyana in enhancing overall REDD Governance, including working with the GFC, GGMC, EPA, GLSC and Amerindian Affairs.

2. Low Carbon Project Management Office The PMO was launched in the third quarter of 2009, and its focus is on coordinating public and private agencies to accelerate the implementation of a limited number of critical projects. In 2010, it will focus on hydropower, telecommunications (in particular, fibre optic infrastructure), the One Laptop per Family initiative, and at-scale integrated export-oriented agricultural development, working alongside

⁵³ For several years, the Government of Guyana has advocated internationally for the necessary social and environmental safeguards to be applied to all REDD+ investments. Towards this end, at the request of the Government of Guyana, all Interim REDD+ payments will be validated by a reputable international institution] to certify adherence to globally recognized social and environmental standards. The detailed work on how to operationalise this has now started.

the Guyana Office for Investment (Go-Invest) to attract sector-leading investments in low carbon economic sectors.

It will also the development of alternative livelihoods within forest communities, working closely with the REDD Secretariat and the Ministry of Amerindian Affairs. It will also assess recruitment and other operational needs for the LCDS, build relationships with the NCSU, GTIS, NICIL, Lands and Surveys Commission and others.

3. Guyana REDD+ Investment Fund As set out in Section 6, the Guyana REDD-plus Investment (GRIF) will be established in 2010 as a multi-contributor financial mechanism, under the authority of the Ministry of Finance, supported by a reputable international financial organization. Currently, Guyana and Norway are in discussions with the World Bank to determine if the World Bank can perform the necessary support functions. GRIF will channel REDD-plus financial support from Norway and other contributors to the implementation of Guyana's LCDS. The Ministry of Finance will be responsible for the execution of GRIF's operations, including working with the Environmental Protection Agency and others to ensure adherence to all agreed-upon safeguards to international standards.

4. REDD Secretariat and MRV Guyana intends to implement the worlds' first national scale REDD+ MRV system, starting in 2010. This will provide the basis for reporting in accordance with the principles and procedures of estimation and reporting of carbon emissions and removals at the national level as specified by the IPCC Good Practice Guidelines and Guidance for Reporting on the international level. The REDD Secretariat will also act as the national co-ordinator for Forest Carbon Partnership Facility (FCPF) activities. Further information is contained in Guyana's RPP.

5. Environmental Protection Agency strengthening Although the details have yet to be finalized, it is likely that Guyana's Environmental Protection Agency will be the lead agency for ensuring that national and international social and environmental standards are met in all GRIF investments. This will require considerable strengthening of the agency in the years ahead.

Indicative Programme: 2012 - 2015

In the second phase of the Interim REDD+ scheme, many of the above activities will continue, as well as a greater focus on investing in:

Further Strategic Economic Infrastructure (requiring US\$200 million to US\$400 million in public and private investment) Guyana has substantial, unused non-forested land—savannahs and swamps—that can be converted to productive use for cash export crops. However, infrastructure for drainage, irrigation, road construction, and off-grid power infrastructure to improve access is needed to realize these opportunities.

For example, in the Intermediate Savannah approximately US\$50 million in roads, power, communications, and related infrastructure investment could improve access to attract and support future investors and workers. In the Canje Basin, it is estimated that in stages some 50,000 hectares or more of rich land could be drained, irrigated, and prepared for agriculture at a cost of approximately US\$ 3,000/ha. or US\$ 150 million over a number of phases. Developers have estimated this land could support US\$ 400 to \$600 million per year in export crops. By developing infrastructure into these parts of the country, economic activity and employment will

be re-oriented away from areas which put pressure on the forest, and from coastal areas subject to flood risk. Work has started to:

- Identify 120,000 hectares of land available for leasing.
- Assemble Soil Data and Agricultural Reports for this land.
- Identify preliminary access route options and road costs combined with river transport.
- Attract direct foreign investment by professional developers.
- Test financing possibilities by multi-lateral institutions, particularly the IFC.
- Identify new use for 10,000 hectares of currently unproductive sugar lands in hands of GOG to preserve and create jobs, develop new cash crops, and provide commercial outlets for surrounding small farms.

Facilitating Investment in high-potential low-carbon sectors Building on the priority diversification opportunities outlined in the National Competitiveness Strategy, Guyana has identified six priority low-carbon sectors: fruits and vegetables, aquaculture, sustainable forestry and wood processing, business process outsourcing, eco-tourism, and possible bio-ethanol. In each of these sectors, long-term market demand exists and Guyana has competitive advantages in essential natural and human resources to attract large-scale catalytic investors.

Clean Transportation Programme The focus in the early days of Guyana's Low Carbon Development Strategy has been on minimizing forestry and energy-related emissions. In future years, the Government will seek to determine how transportation-related emissions can be reduced, especially as the overall transport sector increases with economic growth. This process will be started in 2011, and focus on ways to make transportation costs cheaper overall, while at the same time reducing the carbon intensity of the transportation sector.

Adaptation

Section 5 set out Guyana's adaptation challenges – including US\$1 billion in overall infrastructural development needs, and about US\$300 million of priority requirements. If a properly scaled UNFCCC REDD+ mechanism emerges, Guyana intends to use part of its payment for forestry services to self-finance adaptation investments. Until such time, Guyana will access resources as agreed in the Copenhagen Accord for adaptation – specifically Fast Start Funds for 2010-2012, and 2013-2020 financing. In light of these developments at Copenhagen, the Government of Guyana is currently identifying what Adaptation measures should be prioritized for the period 2010-2012. These will be summarized in a comprehensive Climate Adaptation Plan, to be completed by the third quarter of 2010. These will include:

Upgrading infrastructure and assets to protect against flooding through urgent, near-term measures (US\$225 million). This initiative includes maintaining and upgrading the intricate drainage and irrigation system of Guyana and entails the construction and rehabilitation of sluices, kokers, revetments and embankments. It will also require empoldering as well as the continuous dredging and de-silting of Guyana's major rivers and creeks. Smaller but crucial rivers that protect major farming areas from flooding, such as the Mahaica, Mahaicony and Abary rivers will also benefit under this initiative. In addition, the ocean sea wall which protects most of the low-lying coastal areas from the Atlantic will be reinforced. Groynes to reduce siltation of outfalls will be constructed and additional drainage pumps will be installed in strategic locations across

the coastline. The East Demerara Water Conservancy (EDWC) which protects Georgetown, the East Bank and most of the East Coast from excess water among other functions, will be upgraded in line with the recommendations coming out of the Conservancy Adaptation Pre-investment Study, which focuses on the design of specific adaptation measures for the EDWC. Other conservancies around the country will also be strengthened.

Hinterland Adaptation Measures (US\$10 million) These initiatives include the development, reproduction and distribution of plant varieties and crop management techniques that are suitable for the Hinterland communities, thereby ensuring the sustainability and further development of their livelihoods. In addition, all-weather roads and bridges which are crucial for the transport of agricultural inputs to markets will be constructed. Training and educational programmes and the introduction of additional drainage and irrigation equipment in particularly vulnerable areas will need to be provided in order to improve the capacity of hinterland communities to prepare for and deal with the impacts of more extreme weather events. Solar and wind power for water distribution, facilities for rain water harvesting, and the creation of systems that will guarantee access to safe drinking water during crisis situations will also be pursued under this initiative. Environmental impacts from climate change will also need to be incorporated into building designs, particularly for clay, sandy and loam areas.

Addressing systematic and behavioural concerns (US\$33 million) These initiatives include significantly revamping Guyana's early warning system and improving the timely and accurate collection and dissemination of data and information on weather related events and their impacts on the ground. In addition, an emergency response system will need to be set up that will minimize the risks to public health, ensure that crucial civil structures such as the major infrastructure, safe drinking water systems and electricity and communications networks are maintained in a functioning state. Training and education campaigns of the wider population will also be provided.

Developing innovative financial risk management and insurance measures to resiliency (US\$10 million) These initiatives will include the conceptualization and introduction of instruments suitable in the Guyana context, that will aim to introduce incentives to avoid and reduce all possible sources of risk ex ante while aiming to transfer risks that are outside of the control of individuals and firms to third parties, which will compensate the insured in the event of an extreme event ex-post. Significant investments will need to be channeled towards training, data collection and transmission systems, particularly in relation to vital weather and hydrological information.

Switching to flood resistant crops (US\$10 million) These initiatives will include the funding of research to identify flood resistant crops that are applicable to the Guyana, the creating of flood- proof germplasm banks and the introduction of new technology that allows for cultivation of crops during prolonged flood conditions.

APPENDICES

Appendix I: The start of international partnership: the Guyana-Norway
Memorandum of Understanding and Joint Concept Note

Appendix II: The EVN-EVW Methodology applied to Guyana

Appendix III: Economic Value to the Nation (EVN) methodology

Appendix IV: Forest valuation studies using 10 percent discount rate

Appendix V: Status of Amerindian Lands

Appendix VI: Implementing the Monitoring, Reporting and Verification System

Appendix I: The start of international partnership:

The Guyana-Norway Memorandum of Understanding and Joint Concept Note

See www.lcds.gov.gy for copy of original Memorandum of Understanding

The following pages contain:

- Press Statement after November 9th signing of Memorandum of Understanding between Guyana and Norway
- Memorandum of Understanding
- Joint Concept Note

Press Statement

Joint Press Statement: Guyana and Norway enter into partnership to protect Guyana's tropical forests

FAIRVIEW, GUYANA November 9, 2009

President Bharrat Jagdeo of Guyana and Norway's Minister of the Environment and International Development Erik Solheim today signed a Memorandum of Understanding declaring the two countries' determination to work together to provide the world with a working example of how partnerships between developed and developing countries can save the world's tropical forests.

"It will be impossible to defeat climate change if we don't significantly reduce tropical deforestation", President Jagdeo emphasized. "We said several years ago that the people of Guyana stood ready to play our part in determining how this can be done. We are delighted to work alongside Norway in searching for solutions that align the development aspirations of our people with the urgent need to protect the world's tropical forests."

"Through this partnership, we are building a bridge between developed and developing countries," stated Mr Solheim. "We are giving the world a workable model for climate change collaboration between North and South. It's not perfect, but it's good, and it will be improved upon as we learn and develop together."

Under the partnership, Guyana will accelerate its efforts to limit forest-based greenhouse gas emissions, and protect its rich rainforest as an asset for the world. Norway will provide financial support to Guyana at a level based on Guyana's success in limiting emissions. This will enable Guyana to start implementing its low carbon development strategy (LCDS) at scale. In the words of President Jagdeo, "We want to avoid the high-carbon development trajectory that today's developed world followed." The LCDS sets out how Guyana can limit forest-based emissions, convert almost its entire energy sector to clean energy, accelerate the development of low-carbon economic sectors and address the huge challenges the country is facing in adapting to climate change. As an illustration, 90% of Guyana's productive land is threatened by changing weather patterns, and in 2005, floods wiped out the equivalent of 60% of GDP.

Financial support from Norway will be channeled through a new fund, the Guyana REDD+ Investment Fund (GRIF). Guyana's Ministry of Finance will be responsible for the GRIF's operations, and a reputable international financial institution to be selected by Norway and Guyana will act as manager of the fund. The mechanism will ensure full national and international oversight of financial flows."

"Saving the world's remaining tropical forests is a crucial element in the battle against climate change, and we are proud to support Guyana's contributions in that effort", said Mr Solheim. "We are committed to contributing 30 million dollars to support the Guyana REDD+ Investment Fund in 2010. Provided that the expected results are achieved and that other elements of the partnership fall into place, our support for the years up to 2015 could add up to as much as USD 250 million."

President Jagdeo said, "Addressing climate change can no longer be just about campaigning for action. It must also be about designing solutions and delivering results. This will not happen as long as developing countries are treated as passive recipients of aid. Instead, we need to be equal partners in the search for solutions. When we find solution-oriented partners like Norway,

we will not be found unwilling. And this is not just about Guyana and Norway. The Informal Working Group on Interim Finance for REDD+ has set out a frame-work for others to join us in achieving a 25% reduction in global deforestation and forest degradation by 2015 for less than 25 billion euro. If successful, this would be the single biggest contribution to combating climate change during this period."

Three years ago President Jagdeo said that Guyana might be willing to place its entire rainforest under long-term protection "to help in the world's fight against climate change, providing our peoples' sovereignty is respected." At the signing of the MOU, which took place in the indigenous community of Fairview, the President said "that goal just came closer."

Memorandum of Understanding

Memorandum of Understanding between the Government of the Cooperative Republic of Guyana and the Government of the Kingdom of Norway regarding Cooperation on Issues related to the Fight against Climate Change, the Protection of Biodiversity and the Enhancement of Sustainable Development

The Government of the Cooperative Republic of Guyana (Guyana) and the Government of the Kingdom of Norway (Norway), (hereinafter referred to as the "Participants"):

bearing in mind that climate change is among the greatest challenges facing the world today;

recognizing that cooperation on climate change issues can be instrumental in reducing greenhouse gas emissions globally and has a positive impact on the socio-economic development of developing countries and their communities;

recalling that Guyana and Norway are Parties to the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Convention on Biological Diversity; and are signatories to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP);

considering that the Preamble to the UNFCCC acknowledges that the global nature of climate change calls for the widest possible cooperation between all countries, and their participation in an effective and appropriate international response in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions, and that commitments in this regard are specified in Article 4 of the UNFCCC;

recognizing the relevance of Guyana's National Development Strategy (NDS) and National Competitiveness Strategy (NCS) as the overall policy framework for Guyana's development plans, and Guyana's Low Carbon Development Strategy (LCDS) as an integral part of this overall policy framework;

noting that the LCDS includes a strong commitment to reducing emissions from deforestation and forest degradation, including conservation, sustainable management of forests and enhancement of forest carbon stocks (REDD-plus⁵⁴) and the significant contribution that this can make to the global effort to mitigate climate change;

expressing a willingness to work together to provide the world with a relevant, replicable model for how REDD-plus can align the development objectives of forest countries with the world's need to combat climate change;

declaring that financial support from Norway for results achieved by Guyana in reducing emissions from deforestation and forest degradation will be used in full to support activities and investments within the framework of Guyana's LCDS;

⁵⁴ As defined in the Bali Action Plan (2/CP.13).

declaring that nothing in this Memorandum of Understanding (MoU) will be considered to prejudice the Participants' views on the mechanism through which developing countries should be paid for REDD-plus under a future UNFCCC REDD-plus arrangement. When such an arrangement is defined under the UNFCCC, it will define reference levels – or the methodology to set these – and the amount of results-based financial support for which developing forest countries will be eligible will be derived from the reference levels. Norwegian financial support and Guyana's obligations will be reassessed accordingly;

expressing the political will to develop a lasting process of cooperation on matters relating to global climate change, including REDD-plus, the protection of biodiversity and the rights and livelihoods of indigenous peoples and local forest communities;

have reached the following understanding:

Objective

1. The objective of this MoU is to foster partnership between Guyana and Norway on issues of climate change, biodiversity and sustainable, low carbon development. Of particular importance is the establishment of a comprehensive political and policy dialogue on these issues, and close cooperation regarding Guyana's REDD-plus efforts, including the establishment of a framework for result-based Norwegian financial support to Guyana's REDD-plus efforts.

PILLARS OF COOPERATION

2. To further the objective laid out in paragraph 1 of this MoU, the Participants decide to enter into broad cooperation based on three main pillars:
 - a) *A regular, systematic policy and political dialogue to facilitate a constructive exchange of views on global climate change and relevant environmental issues such as biodiversity.* The overarching goal of this cooperation will be to contribute to the establishment of a new, global climate change regime and the further improvement of this regime over time. In particular, the Participants intend to contribute to the creation of a robust mechanism for the inclusion of REDD-plus in a global climate regime. The Participants agree that Norway's submission to the UNFCCC on REDD-plus and the work of the Informal Working Group on Interim Financing for REDD+ provide an appropriate starting point for such efforts.
 - b) *Collaboration, knowledge building, and sharing of lessons learned within the field of sustainable, low-carbon development, with REDD-plus as the key component of this.* Sustainable, low-carbon development is essential if global warming is to not increase by more than 2⁰C above pre-industrial levels. Given the significant contribution of emissions from deforestation and forest degradation to climate change, and the real risk of increased pressure on forests in currently low-deforesting countries as rates in currently high-deforesting countries are decreased, the Participants consider it crucial that all tropical forest countries, both high- and low-deforesting countries, are given incentives to reduce and avoid emissions from deforestation and forest degradation.
 - c) *Collaboration on REDD-plus, including establishing a framework for financial support from Norway into a Guyana REDD-plus Investment Fund.* Financial support will be linked to Guyana's success in limiting greenhouse gas emissions from deforestation and forest

degradation and establishing institutions and practices to strengthen Guyana's ability to reduce deforestation and forest degradation through the adoption and implementation of a REDD-plus governance development plan (RGDP). As a UNFCCC compliance grade capability for monitoring, reporting and verifying (MRV) emissions is established in Guyana, these results will be measured objectively in accordance with the rules and policies of the UNFCCC. Until these rules and policies are in place, attainment of initial REDD standards will enable financial support. The level of financial support will be based on interim arrangements to estimate and verify results in limiting greenhouse gas emissions from deforestation and degradation. Guyana's LCDS Multi-Stakeholder Steering Committee and other arrangements to ensure systematic and transparent multi-stakeholder consultations will continue and evolve, and enable the participation of all affected and interested stakeholders at all stages of the REDD-plus/LCDS process; protect the rights of indigenous peoples; ensure environmental integrity and protect biodiversity; ensure continual improvements in forest governance; and provide transparent, accountable oversight and governance of the financial support received.

FINANCIAL MECHANISM

3. It is the Participants' intention to establish a Guyana REDD-plus Investment Fund (GRIF). The GRIF will be a multi-contributor financial mechanism run by a reputable international organization. It will be designed to channel results-based REDD-plus funds from Norway and other potential contributors to the implementation of Guyana's LCDS. Safeguards as well as fiduciary and operational policies of the organization selected will apply as appropriate to all activities to be financed by GRIF. The mechanism will also ensure full national and international oversight of financial flows. The Participants will encourage other developed countries to contribute to the Fund as part of their efforts to combat climate change. The GRIF could over time evolve to cover all types of climate change mitigation and adaptation funding, including if appropriate funding received under the UNFCCC.

AN EVOLVING PARTNERSHIP

4. The details of this partnership are further described in a *Joint Concept Note on REDD-plus cooperation between Guyana and Norway* developed by the Participants. This note constitutes the basis for the work of the Participants. While Guyana and Norway consider that this Joint Concept Note clearly lays out their agreed positions as of November 2009, they are also aware that REDD-plus is a new concept, and that this partnership is in the forefront of developments, and are prepared to revise and further develop its content to reflect increased insights as the Partnership, and other related international efforts, move forward and lessons are learned.

Focal Points

5. To contribute to efficient cooperation, each of the Participants will designate a Focal Point to facilitate the implementation of paragraph 2 of this MoU in their respective countries through means to be decided.
6. The Focal Points may prepare and facilitate the policy and political dialogue described under paragraph 2a) of this Memorandum of Understanding, whenever necessary exchanging information relevant to its implementation. In particular, they may also hold and/or facilitate meetings in preparation for sessions of the UNFCCC as well as in the margins of meetings in that body or of the sessions of its subsidiary bodies.

Done in Fairview Village, Guyana, on 9 November 2009, in duplicate and in English, both texts being equally authentic.

FROM ORIGINAL MOU:

Done in Fairview Village, Guyana, on 9 November 2009, in duplicate and in English, both texts being equally authentic.



On behalf of the
Government of the Cooperative Republic
of Guyana

On behalf of the
Government of the Kingdom of Norway

Joint Concept Note

Section 1: Background

On November 9th, 2009, Guyana and Norway signed a Memorandum of Understanding (MoU) regarding cooperation on issues related to the fight against climate change, in particular those concerning reducing emissions from deforestation and forest degradation in developing countries (REDD-plus⁵⁵), the protection of biodiversity, and enhancement of sustainable, low carbon development. This Joint Concept Note constitutes the framework for taking this cooperation forward. Specifically, this concept note addresses Paragraphs 2 (c), 3 and 4 of the MoU signed between Guyana and Norway, to enable the acceleration of Guyana's REDD-plus efforts, based on the results of which Norway will start providing financial support. Being aware that REDD-plus is a new concept, and that this partnership is in the forefront of developments, Guyana and Norway – while considering that this Joint Concept Note clearly lays out their agreed positions as of November 2009 – will also be open to revising and further developing its content to reflect increased insights as the Partnership, and other related efforts, moves forward and lessons are learned.

The Norwegian financial support will be channeled through a multi-contributor financial mechanism (the Guyana REDD-plus Investment Fund, GRIF) which will be run by a reputable international organisation. The support will finance two sets of activities:

- The implementation of Guyana's Low Carbon Development Strategy (LCDS)
- Guyana's efforts in building capacity to improve overall REDD+ and LCDS efforts. This is described in Section 4.

The level of support will depend on Guyana's delivery of results as measured against two sets of indicators:

- *Indicators of enabling activities:* A set of policies and safeguards to ensure that REDD-plus contributes to the achievement of the goals set out in Paragraph 2(c) of the MoU signed between Guyana and Norway on November 9th, 2009, namely "that Guyana's LCDS Multi-Stakeholder Steering Committee and other arrangements to ensure systematic and transparent multi-stakeholder consultations will continue and evolve, and enable the participation of all affected and interested stakeholders at all stages of the REDD-plus/LCDS process; protect the rights of indigenous peoples; ensure environmental integrity and protect biodiversity; ensure continual improvements in forest governance; and provide transparent, accountable oversight and governance of the financial support received. The enablers are described in more detail in Section 2 below.

⁵⁵ As defined in the Bali Action Plan (2/CP.13).

- REDD-plus Performance Indicators: A set of forest-based greenhouse gas emissions-related indicators, as described in more detail in section 3 below. These indicators will gradually be substituted as a system for monitoring, reporting and verifying (MRV) emissions from deforestation and forest degradation in Guyana is established. A timeframe for when and how this will happen will be established in 2010.

The contents of this concept note, including both sets of indicators above, will be updated to include annual progress in developing the MRV system and in strengthening the quality of REDD-plus-related forest governance according to Guyana's REDD-plus governance development plan, as well as to reflect developments in negotiations under the UNFCCC. The Government of Guyana is responsible for providing the necessary data for assessing performance against the given indicators.

Section 2: Indicators of Enabling Activities

The Governments of Guyana and Norway have decided that the commencement and annual continuity of result-based financial support from Norway will depend on agreed progress, as described below, regarding the following seven factors:

- **Strategic framework**

All aspects of Guyana's planned efforts to reduce deforestation and forest degradation, including forest conservation, sustainable management of forests and enhancement of forest carbon stocks ("REDD-plus"), are being developed in a consistent manner, through an internationally recognized framework for developing a REDD-plus programme, and will continue to evolve over time. Currently, the UN REDD Programme and the Forest Carbon Partnership Facility (FCPF), managed by the World Bank, are two examples of this; the latter constitutes the framework under which Guyana is developing its REDD-plus efforts. Furthermore, all REDD-plus efforts will at all stages be fully integrated in Guyana's Low Carbon Development Strategy (LCDS). The contributions to Guyana's REDD-plus/LCDS from Norway and other contributors, including the FCPF, will be administered in a transparent manner. Information concerning all expenditures, both planned and implemented, will be publicly available.

- **Continuous multi-stakeholder consultation process:**

The LCDS, including the REDD-plus strategy and prioritized LCDS funding needs, will continue to be subject to an institutionalized, systematic and transparent process of multi-stakeholder consultation, enabling the participation of all potentially affected and interested stakeholders at all stages of the REDD-plus/LCDS process. This process will continue to evolve over time. Particular attention will be given to the full and effective participation of indigenous peoples and other forest-dependent communities. Guyana's policy is to enable indigenous communities to choose whether and how to opt in to the REDD-plus/LCDS process only when communities wish to do so, in accordance with Guyana's policy of respecting the free, prior and informed consent of these communities. The consultation process will continue to be monitored by an expert team appointed jointly by Guyana and Norway. This team will provide advice to all stakeholders and report on the quality, implementation and adequacy of processes and institutional arrangements to suit the relevant stage of the consultation process, e.g. through regular meetings of a representative multi-stakeholder steering committee.

- **Governance:**

The independent assessments of current forest governance and logging practices in Guyana, as performed by the Center for International Forestry Research (CIFOR) and the Food and Agriculture Organization of the United Nations (FAO), in addition to relevant legislation, policies and processes in Guyana, should form the basis for the continued development of a transparent, rules-based, inclusive forest governance, accountability and enforcement system. The

development and implementation of this governance model will be integrated with the LCDS. Where appropriate, experiences from REDD-plus-relevant initiatives and projects nationally and internationally should be applied.

An outline of Guyana's REDD-plus governance development plan will be prepared by the end of 2009. A more detailed plan will be developed by October 2010, with clear requirements and timelines for its implementation. The development plan will be subject to review by an independent institution, jointly designated by the two Participants, and should include the points set out in Table 1. These points will be further developed over time, and the two Participants will adjust the Indicators of Enabling Activities annually for the subsequent year, based on the detailed REDD-plus governance development plan (RGDP).

- **Financial mechanism:**

The Guyana REDD-plus Investment Fund (GRIF) will be a multi-donor financial mechanism managed by a reputable international organization. The organization will be jointly selected by the Participants. The GRIF must be operational before any contributions can be disbursed from Norway.

The GRIF will channel REDD-plus financial support from Norway and other potential donors to the implementation of Guyana's LCDS. Safeguards – including social, economic and environmental safeguards – as well as the fiduciary and operational policies of the organization selected, will apply, as appropriate, to all activities to be financed by the GRIF.

The Ministry of Finance of Guyana will be responsible for the execution of the GRIF's operations, with the selected international organization acting as manager. The manager will be responsible for ensuring full oversight of the GRIF's operations, including fiduciary obligation as trustee, and providing technical support as agreed with Guyana. One additional element which might have to be added to these safeguards is for the fund manager to ensure where appropriate that environmental impact assessments of LCDS initiatives under consideration for funding include estimates of greenhouse gas emissions impact.

Guyana and Norway believe that the fund administrator will need to apply innovative and modern capabilities to ensuring that safeguard compliance is done in an efficient and expeditious manner – a mechanism for pre-screening of thematic areas should contribute to this. The capability to enable this will be one of the criteria by which Guyana and Norway will determine who is to be the administrator of GRIF. GRIF could, if appropriate under a future UNFCCC climate change regime, over time evolve into a comprehensive climate change mitigation and adaptation fund.

- **MRV:**

A needs assessment for a national system to monitor, report and verify (MRV) emissions or removals of carbon from Guyana's forest sector shall be developed. The MRV-system must provide the basis for reporting in accordance with the principles and procedures of estimation and reporting of carbon emissions and removals at the national level as specified by the IPCC Good Practice Guidelines and Guidance for reporting on the international level, as well as meeting the particular data needs of the national RGDP.

A road map for the national MRV-system will be developed. The plan will describe the process towards establishing the system, including timelines, milestones and cost estimates.

The needs assessment and roadmap will be used as basis for dialogue and negotiations with potential providers of support and services to the national MRV system (including capacity building, methodologies for carbon estimation, technical infrastructure, etc). Where relevant, open tender processes will be applied.

Establishing a status quo/baseline database on the Guyanese forest sector, including assessments of historical and current deforestation rates at the latest by October 2010, will be a first priority.

- **The rights of indigenous peoples and other local forest communities as regards REDD-plus**

The Constitution of Guyana guarantees the rights of indigenous peoples and other Guyanese to participation, engagement and decisionmaking in all matters affecting their well-being. These rights will be respected and protected throughout Guyana's REDD-plus and LCDS efforts, and there shall be a mechanism to enable the effective participation of indigenous peoples and other local forest communities in planning and implementation of REDD-Plus strategy and activities.

- **Annual assessment and verification:**

Annual independent overall assessments will be conducted by one or more neutral expert organizations, to be appointed jointly by the Participants in consultation with the international financial institution managing the GRIF, on whether or not the REDD-plus enablers have been met; and what results Guyana has delivered according to the established indicators for REDD-plus performance. A neutral expert organization will also provide an annual status report for the Governments of Norway and Guyana. In this status report, the organization will outline its independent assessment of all Participants in the REDD+ process, and make recommendations for process and capability improvements. This will include an assessment of whoever is selected as the administrator of GRIF.

Section 3: REDD-plus performance Indicators

In the absence of an operational MRV-system for emissions or removals of carbon from Guyana's forest sector, a set of basic interim indicators will be used to assess Guyana's performance, see table 2. As a more sophisticated forest carbon accounting-system is implemented, these basic indicators will be gradually phased out. The set of interim performance indicators is based on the following assumptions:

- They provide justification and prioritization for near-term implementation of REDD-plus efforts.
- They are based on conservative estimates while encouraging the development of a more accurate MRV system over time through building national capacities.
- They will contribute towards the development of a national MRV-system, based on internationally accepted methodologies and following the IPCC reporting principles of completeness, consistency, transparency, uncertainty, comparability, and encourage independent international review of results.

Until a UNFCCC methodology (or other agreed multilateral methodology) is established, the maximum sum of results-based financial support from Norway (and others) to the GRIF will be determined utilizing five elements:

- Subtracting Guyana's observed deforestation rate from an agreed interim reference level of 0.45 %.⁵⁶ ;
- Calculating the carbon emission reductions achieved through reduced deforestation (as compared to the agreed reference level) by applying an interim and conservatively set estimate of carbon loss of 100tC/ha. This value will be replaced once a functional MRV system is in place. The interim carbon loss figure corresponds to 367tCO₂/ha;
- Subtracting from that number changes in emissions – on a ton-by-ton basis – from forest degradation as measured against agreed indicators, as specified in Table 2 below. In calculating the carbon effects of forest degradation, an interim and conservatively set

⁵⁶ The Conference of the Parties of the UNFCCC will set the reference levels – or the methodologies for calculating these – for a global REDD-plus arrangement. When that work is completed, Guyana's reference level will be adjusted accordingly. To set Guyana's interim reference level as a basis for Norwegian 2010 contributions to the GRIF, a methodology has been used giving equal weight to national (estimated to 0,3%* for Guyana) and collective tropical forest countries deforestation rates (estimated to 0,6%**). Such an approach would both ensure global additionality and incentives to all significant categories of forest countries if applied overall to a global REDD-plus arrangement.

* Guyanas RPP indicates a current deforestation rate of 0.1 – 0.3%. A report by the UN REDD programme (Cedergren 2009) indicates that the figure may be 0.4% based on data on historical forest area in Guyana, but also underlines that this figure needs to be investigated further. Cedergren also makes reference to an EarthTrend study indicating 0.3% forest loss between 1990 and 2001.

** Annual percentage cover change in all tropical developing countries with positive deforestation (based on FAO FRA 2005 data on forest area and annual forest cover change 2000 – 2005).

carbon density of 400 tC/ha⁵⁷ will be applied. Upon agreement under the UNFCCC on how to estimate and account for emissions from degradation, this approach will be adjusted accordingly;

- Applying an interim carbon price of US\$5/ton CO₂, as established in Brazil's Amazon Fund.

The maximum level of support for results achieved in 2009 will be calculated based on historical data as estimated by FAO and for indicators of enabling activities for 2009. Subsequent annual assessments will cover the period from 1 October until 30 September in the two years preceding the relevant budget year, unless otherwise agreed by the Participants.

For the sake of illustration, the maximum level of financial support based on results achieved in 2009 could be calculated as follows:

1. If Guyana's deforestation rate in 2009 is assessed to be 0.3% (of a forest area of 15 million hectares, which would be the case if indigenous groups opt in to REDD-plus and the Guyana-Norway partnership – if they do not the forest area will be lower), this is 0.15% below the reference level of 0.45%, so corresponds to 22,500 hectares of avoided deforestation;
2. Using the interim carbon stock value of 367 tCO₂ per hectare, this represents 8,257,500 t CO₂;
3. At an interim carbon price of US\$5/t CO₂, this would translate to a maximum level of financial support of US\$41,287,500.
4. Each ton of estimated increase of emissions from forest degradation– as based on the methodology described above – would lead to a decrease in level of maximum financial support of US\$5.

All the above described variables will be revisited by the Participants based on improved data on deforestation rates, improved MRV capabilities, and developments under the UNFCCC and other possible international cooperation arrangements.

Norwegian support to GRIF – alone or in combination with other contributors – will not exceed the sum calculated on the basis of the above described methodology (neither in 2010 nor in future years). It is a goal of the Participants to get other Participants to join the partnership in order to make it sustainable in the long term, as it is unlikely that Norwegian support will ever equal this sum. This will enable Norwegian contributions to vary directly with performance, i.e. a reduction in

⁵⁷ The figure 400 tC/ha is based on a study by Ter Seege 2001, as referred in Cedergrén, 2009. Ter Seege found a typical Guyanese forest to have an average carbon stock of 351 tC/ha. To be conservative we use 400 tC/ha.

estimated emissions will lead to relatively higher contributions, increases to relatively lower contributions.

The question of self-financing is most appropriately addressed under the UNFCCC. This MoU will be adjusted as appropriate for the conclusions there reached.

The question of payment for forest-based eco-system services (other than carbon) may be addressed through future international or other mechanisms. This MOU will be adjusted as appropriate for any conclusions there reached.

The Participants agree that the financial support seeks to provide incentives to avoid future deforestation, and the interim reference level has been established accordingly. While financial support will continue to be based on this reference level, the Participants agree that Norwegian financial support from 2011 onwards is also dependent on no national-level increase in deforestation over an agreed level that should be as close to historical levels as is reasonable in light of expanded knowledge of these historical rates and the quality of that knowledge. Such a level can only be set when more robust data is available concerning current and historic deforestation. This level will be set through a mutually agreed process by no later than October 2010.

Section 4: Accelerating REDD+ Efforts in 2009 and 2010:

Norway's financial support to Guyana will be result-based, as set out in Sections 2 and 3. During the first years of cooperation, a portion of this support will finance specific REDD-plus capacity building activities (what the IWG-IFR refers to as "policy and participation enablers" as set out in the LCDS and FCPF documents (including Guyana's R-PP). The activities to be covered in 2009 and 2010 include:

- MRV system;
- Project Management Office and Office of Climate Change (operational costs);
- Multi-stakeholder consultation process;
- Annual verification by neutral experts that the REDD-plus enabling activities have been completed as appropriate;
- Annual verification by neutral expert(s) of the maximum amount due to Guyana according to the indicators for REDD-plus performance; and
- The establishment of a system for Independent Forest Monitoring (IFM).

The contributions to capacity building will decrease over time, resulting in a gradually larger emphasis on financing implementation of activities under the LCDS. The funding of some of the above activities could be done in partnership with donors and other international partners and the Government of Guyana. To ensure consistency and avoid overlap, Guyana will transparently communicate how each element of the LCDS is being supported by various contributors.

- The Participants agree that the following steps – in addition to other elements – would constitute positive contributions to Guyana's forest governance, and should thus be in place before financial support commences:
 - first formal steps taken by Guyana to establish independent forest monitoring by a credible, independent entity;
 - an outline of the REDD-plus governance development plan, which includes the issues listed below.
- The Participants also agree that as well as independent forest monitoring, Guyana's engagement with other forest-related international processes could assist in building better mechanisms for ensuring high national and international standards for trade in forestry products. In line with its declared intention to engage with the European Union Forest Law Enforcement, Governance and Trade (FLEGT) processes, and the Extractive Industries Transparency Initiative, the Government of Guyana will by the end of 2009:

- start a formal dialogue with the European Union with the intent of joining its Forest Law Enforcement, Governance and Trade (FLEGT) processes towards a Voluntary Partnership Agreement (VPA);
- start a formal dialogue with the Extractive Industries Transparency Initiative (EITI) or an alternative mechanism agreed by the Participants to further the same aim as EITI.

Table 1: Contents of REDD+ Governance Plan

The REDD-plus governance development plan should include the following points:

- Transparency and accountability are key to success in any REDD-plus effort. REDD-plus-relevant decisions and data should be publicly available. Guyana recognizes the need to demonstrate international standards, and therefore aims to implement IFM. Data generated through IFM and EITI (or an alternative mechanism agreed by the Participants to further the same aim as EITI) could also serve as input and/or verifiers to the forest carbon accounting system. Guyana has also decided to enter into a dialogue with the European Union with the purpose of entering the FLEGT program; through a Voluntary Partnership Agreement;
- The development of a system for reporting on the multiple benefits of REDD-plus, including on measures to protect biological diversity, improved livelihoods, good governance, and how the Constitutional protection of the rights of indigenous peoples and local communities are facilitated within the framework of Guyana's REDD-plus efforts.
- The development of a national⁵⁸, inter-sectoral, land use planning system in order to avoid national leakage, with REDD-plus as the overarching goal and with specific emphasis on managing the impacts of infrastructure development and agricultural expansion on forests;
- The development of valuation systems for determining the costs and benefits of different alternatives and courses of action on the forest resource, related to environmental benefits and new alternative uses of forests, and also more classical uses and standing timber values;
- A strengthened forest monitoring and control system, focusing on all significant drivers of deforestation and degradation, including logging, mining and agriculture activities on forest lands. Monitoring and control activities must be intensified in areas identified as or assumed to be of high risk of deforestation and forest degradation, for example in border areas or adjacent to infra-structure developments;
- Establishment of criteria for identifying priority areas for biodiversity within Guyana's forests, to inform the overall land use planning system and especially the REDD-plus component of the LCDS. Policies should be put in place for concession holders in the different REDD-plus-relevant areas, such as logging, mining and agriculture, to adopt best practice, including with regards to protecting biodiversity. Indicators to monitor

⁵⁸ Although the land use planning system will be developed on a national level, that does not imply opt-in of indigenous lands until their free, prior, and informed consent has been gathered.

progress should be put in place, e.g., increases in areas with certified REDD-plus-relevant concessions; and over time company compliance with EITI or equivalent commitments if appropriate. Identified forest biodiversity priority areas should also be targeted for expanded conservation/protection efforts;

- The development of a multi-year plan to continue the process of titling, demarcation, and extension of Amerindian lands when requested to do so by Amerindian communities, with the aim of completing the process for outstanding requests. The Government of Guyana has expressed the urgency of accelerating this process, and sees REDD-plus as an opportunity to achieve this;
- The development of the mechanisms by which distribution of REDD-plus funds will occur, as set out in the LCDS. The distribution system will be publicly available and will be reported on annually. The Government of Guyana has stated that all REDD-plus funds that accrue for indigenous peoples will be allocated to indigenous communities. The RGDP will set out more detail about how this will work. The system will recognize the stewardship role of indigenous peoples protecting forest on their traditional lands.
- An overview of all funding directed to activities relevant to REDD-plus/LCDS efforts in Guyana shall be made public and be updated on the LCDS website, in order to ensure maximum effectiveness of the funds and to provide transparency concerning contributors to Guyana's REDD-plus/LCDS efforts; and
- The mandating and where appropriate establishment of operational institutions tasked with and given authority to implement and coordinate strategic activities of the LCDS as well as Guyana's REDD-plus plans as part of the LCDS, as prioritized by Guyana through its multi-stakeholder consultation process. These institutions will also coordinate national and international actors involved in efforts relevant to REDD-plus and be responsible for identifying human resources needs in the various entities involved in the REDD-plus governance process.
- The continuation of the institutionalized, transparent, multi-stakeholder processes to ensure that grievances can be addressed as an intrinsic part of Guyana's ongoing REDD-plus efforts.

Table 2: Interim Indicators for REDD+ performance in Guyana⁵⁹

Source of emissions or removals	Justification	Interim performance indicator	Monitoring and estimation	IPCC LULUCF reporting
Deforestation indicator:				
Gross deforestation	Emissions from the loss of forests are among the largest per unit emissions from terrestrial carbon loss.	<p>Rate of conversion of forest area as compared to agreed reference level.</p> <p>Forest area as defined by Guyana in accordance with the Marrakech accords.</p> <p>Conversion of natural forests to tree plantations shall count as deforestation with full carbon loss.</p> <p>Forest area converted to new infrastructure, including logging roads, shall count as deforestation with full carbon loss.</p>	<p>Forest cover on 3 February 2009 will be used as baseline for monitoring gross deforestation.</p> <p>Reporting to be based on medium resolution satellite imagery and in-situ observations where necessary.</p> <p>Monitoring shall detect and report on expansion of human infrastructure (eg. new roads, settlements, pipelines, mining/agriculture activities etc.)</p>	Activity data on change in forest land
Degradation indicators:				
Loss of intact forest landscapes ⁶⁰	Degradation of intact forest through human activities will	The total area of intact forest landscapes within the country should	Using similar methods as for forest area change estimation.	Changes in carbon stocks in forests

⁵⁹ The Participants agree that these indicators will evolve as more scientific and methodological certainty is gathered concerning the means of verification for each indicator, in particular the capability of the MRV system at different stages of development.

⁶⁰ **Intact Forest Landscape (IFL)** is defined as a territory within today's global extent of forest cover which contains forest and non-forest ecosystems minimally influenced by human economic activity, with an area of at least 500 km² (50,000 ha) and a minimal width of 10 km (measured as the diameter of a circle that is entirely inscribed within the boundaries of the territory)." (See www.intactforests.org)

	<p>produce a net loss of carbon and is often the pre-cursor to further processes causing long-term decreases in carbon stocks.</p> <p>Furthermore, preserving intact forests will contribute to the protection of biodiversity.</p>	<p>remain constant. Any loss of intact forest landscapes area shall be accounted as deforestation with full carbon loss.</p>		<p>remaining as forests</p>
<p>Forest management (i.e. selective logging) activities in natural or semi-natural forests</p>	<p>Forest management should work towards sustainable management of forest with net zero emissions or positive carbon balance in the long-term.</p>	<p>All areas under forest management should be rigorously monitored and activities documented (i.e. concession activities, harvest estimates, timber imports/exports).</p> <p>Increases in total extracted volume (as compared to mean volume 2003 – 2008) will be accounted as increased forest carbon emissions⁶¹ unless otherwise can be documented using the gain-loss or stock difference methods as described by the IPCC for forests remaining as forests. In addition</p>	<p>Data on extracted volumes is collected by the Forestry Commission. Independent forest monitoring will contribute to verify the figures.</p>	<p>Changes in carbon stocks in forests remaining as forests</p>

⁶¹ The participants agree on the need to create incentives for net-zero or carbon positive forest management practices in Guyana. This will require a sophisticated MRV system to assess the carbon effects of forestry activities. This will be an objective of the MRV system under development. In the interim period, focus will be on incentives for avoiding increased emissions from forest management activities.

		to the harvested volume, a default expansion factor (to be established) shall be used to take account of carbon loss caused by collateral damage, etc, unless it is documented that this has already been reflected in the recorded extracted volume.		
Carbon loss as indirect effect of new infrastructure.	The establishment of new infrastructure in forest areas often contributes to forest carbon loss outside the areas directly affected by constructions.	Unless a larger or smaller area or greenhouse gas emission impact can be documented through remote sensing or field observations, the area within a distance extending 500 meters from the new infrastructure (incl. mining sites, roads, pipelines, reservoirs) shall be accounted with a 50% annual carbon loss through forest degradation.	Medium resolution satellite to be used for detecting human infrastructure (i.e. small scale mining) and targeted sampling of high-resolution satellite for selected sites.	Changes in carbon stocks in forests remaining as forests
Emissions resulting from subsistence forestry, land use and shifting cultivation lands (i.e. slash and burn agriculture).	Emissions resulting from communities to meet their local needs may increase as result of <i>inter alia</i> shorter fallow cycle or area expansion.	Not considered relevant in the interim period before a proper MRV-system is in place.		Changes in carbon stocks in forests remaining as forests
Emissions resulting from illegal logging activities	Illegal logging results in unsustainable use of forest resources while undermining national and international climate change	Areas and processes of illegal logging should be monitored and documented as far as practicable.	In the absence of hard data on volumes of illegally harvested wood, a default factor of 15% (as compared to the legally harvested volume) will be used. This factor	Changes in carbon stocks in forests remaining as forests

	mitigation policies		can be adjusted up- and downwards pending documentation on illegally harvested volumes, inter alia from Independent Forest Monitoring. Medium resolution satellite to be used for detecting human infrastructure and targeted sampling of high-resolution satellite for selected sites.	
Emissions resulting from anthropogenically caused forest fires	Forest fires result in direct emissions of several greenhouse gases	Area of forest burnt each year should decrease compared to current amount	Coarse-resolution satellite active fire and burnt area data products in combination with medium resolution satellite data used for forest area changes	Emissions from biomass burning
Indicator on increased carbon removals:				
Encouragement of increasing carbon sink capacity of non-forest and forest land	Changes from non-forest land to forest (i.e. through plantations, land use change) or within forest land (sustainable forest management, enrichment planting) can increase the sequestration of atmospheric carbon.	Not considered relevant in the interim period before a proper MRV-system is in place but any dedicated activities should be documented as far as practicable. In accordance with Guyanese policy, an environmental impact assessment will be conducted where appropriate as basis for any decision on initiation of afforestation, reforestation and carbon stock enhancement projects.		Activity data on change to forest land and changes in carbon stocks in forests remaining as forests

Appendix II: The EVN-EVW methodology applied to Guyana

EVN and EVW: The solution space for avoiding deforestation

There are powerful, rational incentives for forested countries to deforest even though this causes massive negative consequences for the world. Two concepts explain this misalignment of current incentives: deforestation's economic value to the nation (EVN) and forests' economic value to the world (EVW).

Deforestation's economic value to the nation (EVN)

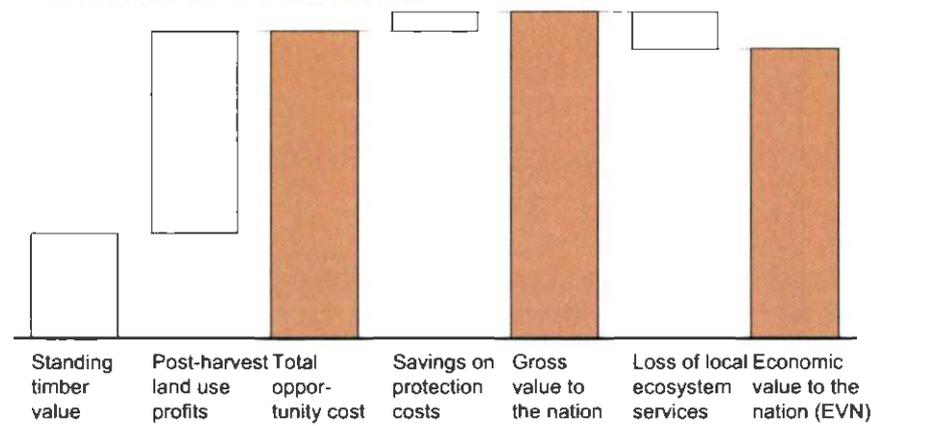
National and local policymakers have a responsibility to their home constituencies to promote social and economic development. Because forested land can generate greater economic value when put to other uses, individuals and companies in developing countries face powerful incentives to exploit these opportunities. In turn, national and local governments will face political pressure to permit or even encourage deforestation. Today's richest countries, such as the United States, actively pursued deforestation and land conversion to agriculture in early phases of development for exactly these reasons.

Land conversion can create significant 'economic value to the nation' (EVN) – which is intuitively obvious judging by the high rates of deforestation typically associated with economic development. The EVN from deforestation has four principal components: standing timber value, post-harvest land use profits, savings on forest protection costs, and loss of local ecosystem services.⁶²

⁶² For technical assumptions on EVN as applied in Guyana see Appendix II.

Exhibit 8

FOUR COMPONENTS OF EVN



1. Standing timber value. Forests contain valuable wood that can be harvested and sold for multiple uses, such as sawnwood, pulp, and fuelwood. While some of this value can be tapped through sustainable management practices, unsustainable extraction is typically more economically attractive, as it generates higher timber volumes and earlier cash flow. Early cash flow is particularly important in developing countries, which have huge developmental objectives which require funding to lay the foundation for future economic growth.

2. Post-harvest land use value. Post-harvest uses such as commercial agriculture, plantation forestry, ranching, and mining can generate attractive ongoing cash flow after trees are cleared from the land. The value from post-harvest land use is typically even greater than the value of the standing timber and will drive deforestation even where forest resources are not themselves commercially valuable.

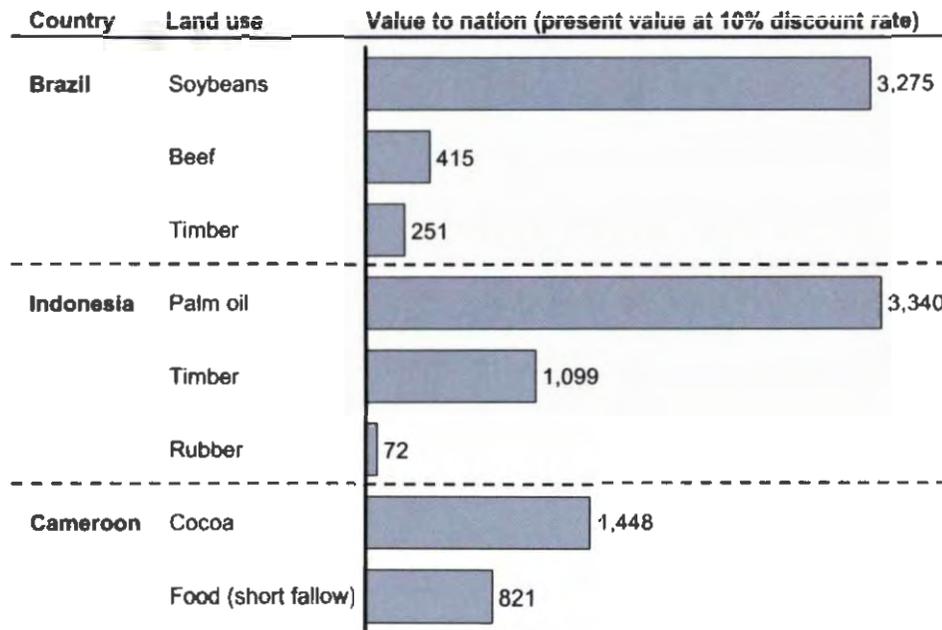
3. Avoided protection costs. Tropical governments spend significant amounts on forestry personnel and equipment to monitor and protect their forests. These costs could be avoided if countries choose to relax levels of forest protection, thereby leading to increased deforestation.

4. Loss of local ecosystem services. Standing forests generate significant local ecosystem services – those services whose economic benefits accrue primarily to local stakeholders – that are lost when forests are cleared. These services include, among others, flood control, the provision of non-timber forest products, and eco-tourism.⁶³

Exhibit 9

'ECONOMICALLY RATIONAL' USE OF LAND GENERATES PROFITS... AND DEFORESTATION

⁶³ Local ecosystem services exclude the local element of 'global' ecosystem services that will be lost or impaired as a consequence of global climate change, as it is not possible to attribute these impacts to land use emissions relative to other existing and historical sources of greenhouse gas emissions.



Source: Greg-Gran (2008), Eliasch Review

Defining forests' economic value to the world (EVW)

Standing forests provide tremendous global economic value in the form of ecosystem services, including carbon storage, climate regulation, and biodiversity conservation. However, there are no commodity prices or traded markets for most of these services, making it difficult to estimate their value and impossible for forested countries to generate income from them. Deforestation destroys these services and imposes significant costs on the world; the recent Eliasch Review reports that the world loses \$1.8-\$4.2 trillion (€1.35-€3.1 trillion) in ecosystem services each year due to deforestation. The size of this number reflects the very significant values that standing forests provide, which some researchers estimate to be as high as \$25,000 per hectare in net present value terms.⁶⁴

The services provided by forests produce 'economic value to the world' (EVW), a concept that captures the true economic value of the ecosystem services that forests provide. However, in practical terms, there is only one market of real importance for an environmental commodity: the carbon market. Since abatement of carbon emissions is the only ecosystem service that the world is currently willing to pay for at meaningful scale, the carbon price is a reasonable proxy for the world's willingness to pay for ecosystem services despite carbon market fragmentation across geographies and incomplete scope (they largely exclude abatement opportunities in the forestry sector today).

The value of avoided carbon emissions from deforestation therefore serves as a proxy for the economic value to the world that forests provide (hereafter denoted as EVW_C). Since a ton of carbon emissions avoided from reducing deforestation provides essentially the same ecosystem

⁶⁴ Government of the United Kingdom, *Climate Change: Financing Global Forests: The Eliasch Review*, page 30. United Kingdom: 2008. (Citing Braat and Ten Brink (2008).)

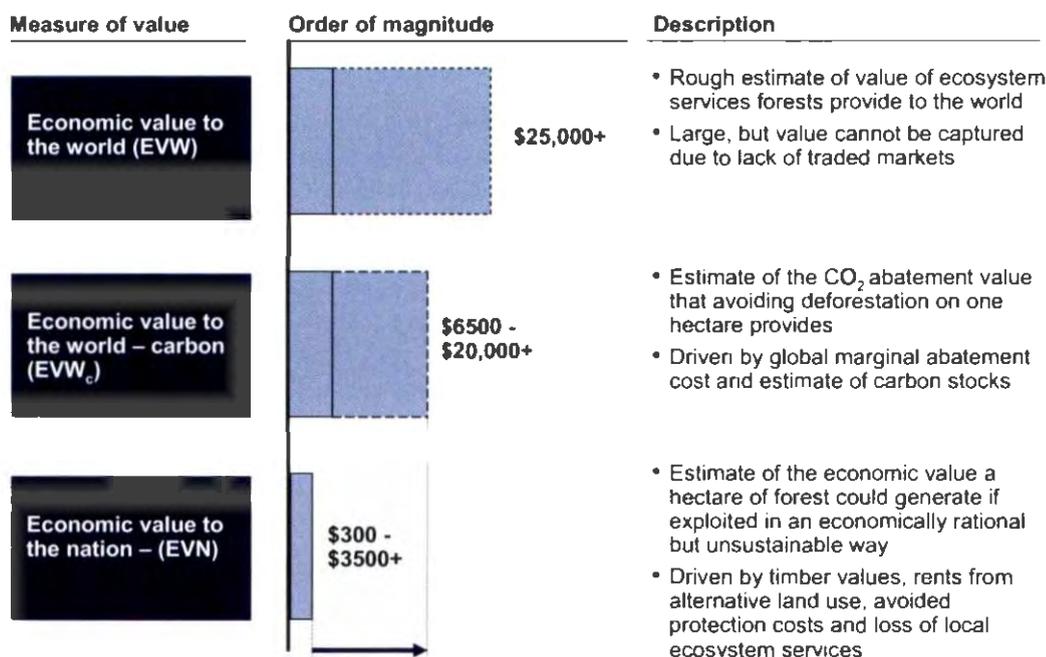
services as a ton of carbon emissions abated by other means, its economic value to the world is the same, and the world's theoretical willingness to pay should be the same. Just as Certified Emissions Reductions (CERs) receive the same prices regardless of their source, tons of carbon abatement from avoided deforestation should be roughly equivalent in value to tons from other abatement levers, potentially discounted as appropriate to account for permanence risk and other methodological challenges.

Valued at today's CER price of approximately \$20/ton and assuming crediting for carbon stored only in above-ground biomass, EVW_C from avoided deforestation would range from \$6,500 to \$7,000 per hectare in Guyana.⁶⁵ Valued at projected global marginal abatement costs of \$60 to \$80 per ton in 2030, EVW_C could eventually exceed \$20,000 per hectare of forest protected from deforestation.⁶⁶ These values vastly exceed most alternative land uses and suggest that the world has a very strong interest in preventing deforestation. Other ecosystem services are valuable, but currently irrelevant to decision-makers given the absence of institutional mechanisms for compensation.

Exhibit 10

EVW, EVW_C , AND EVN PROVIDE BOUNDARY CONDITIONS FOR A DEAL

\$US, present value per hectare of forest



⁶⁵ Assumption is loss of above-ground biomass only, at 342.78 tCO₂e per hectare, from FAO Forest Resources Assessment 2005

⁶⁶ Based on 2030 marginal abatement cost from McKinsey & Company. "A Cost Curve for Greenhouse Gas Reduction." *McKinsey Quarterly*, 2007 Number 1

Boundary conditions for aligning incentives

Halting deforestation requires aligning the interests of forest countries and the broader community of nations. In turn, alignment would require remuneration for forest ecosystem services that lies between EVN and EVW_C , with EVN the 'floor' and EVW_C the ceiling in this range of values. Incentives that lie between EVN and EVW_C will align national and global interests; values below EVN or above EVW_C will not. If support falls below EVN , deforestation will continue as stakeholders in forested nations act in their own rational economic interest, making forest protection progressively more difficult. If the cost of forest protection exceeds EVW_C , the world will forgo conservation from avoided deforestation and seek carbon abatement elsewhere.

In this range of values, forested countries will find economic value from forest conservation that exceeds the economic value to the nation from deforestation, and the world will continue to receive valuable ecosystem services at a cost less than or equal to their full value to the world. All parties will be better off as the world enables forested countries to diversify their economies away from activities that drive deforestation while continuing to grow.

The following section outlines a methodology for estimating EVN and applies it to the Republic of Guyana in an illustrative case study.

How to measure EVN: The case of Guyana

Measuring EVN involves three steps: assessing the value of each component of EVN for each unit of land in a country; charting an economically rational deforestation path; and developing reasonable probabilistic estimates of the EVN . This section explains this approach in greater detail by application to the Republic of Guyana, a developing country with a large tropical rainforest.

Estimating EVN in Guyana

Guyana faces many of the challenges and opportunities faced by all forested countries seeking to reduce deforestation. The country has a strong track record of sustainable forestry practices, with FAO statistics demonstrating no net loss of forest cover between 1990 and 2005.⁶⁷ However, economic pressures to increase value from forest resources in Guyana are growing. The great majority of Guyana's forests are suitable for timber extraction, there are large sub-surface mineral deposits within the forest, and rising agricultural commodity prices increase the potential returns to alternative forms of land use, all increasing the opportunity cost of leaving the forest alone. These challenges will intensify as infrastructure links between Northern Brazil and Guyana advance, increasing development opportunities in the interior of Guyana.

Guyana also faces potentially massive climate change adaptation costs given the need to protect low-lying areas from the risk of flooding (~90 percent of Guyana's population and all of its

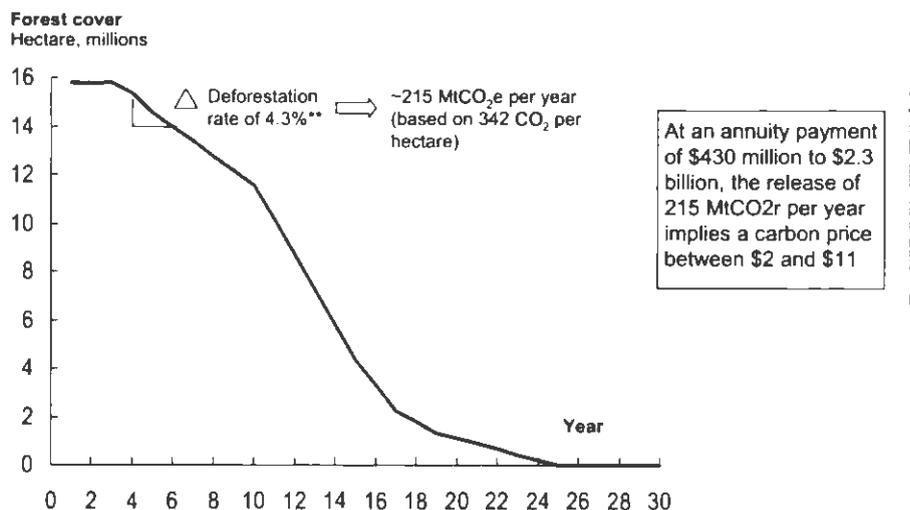
⁶⁷ Food and Agriculture Organization of the United Nations. Forest Resources Assessment 2005. Rome: 2005

economic base lives on a narrow strip of coastal land that lies below sea level, rendering it vulnerable to sea-level rise and inland flooding). Moreover, its citizens expect continuously better social and economic services as the country develops. If long-term economic incentives to protect the forest are weak, future Governments may find it necessary to meet these needs using revenues from unsustainable resource extraction. These pressures bring into sharp focus the need to create meaningful incentives for forest conservation, and make Guyana an important case study in the economics of deforestation.

The Office of the President has estimated EVN in Guyana using a baseline scenario in which Guyana aggressively pursues economically rational land use opportunities. A high-level probabilistic analysis indicates a value that is likely to lie between \$4.3 billion and \$23.4 billion depending on movement of commodity prices, with a most likely estimate of \$5.8 billion.⁶⁸ These estimates are equivalent to an annuity of between \$430 million and \$2.3 billion at a 10 percent discount rate, suggesting that Guyana forgoes an amount roughly equal to its current GDP of \$1,100 per capita in preventing extraction from its forests.⁶⁹ Conservative carbon stock estimates and the 'economically rational' baseline deforestation rate suggest a marginal abatement cost of \$2 to \$11 /tCO₂e.

Exhibit 11

Calculation of marginal carbon abatement cost for avoided deforestation in Guyana



Source: FAO 2005 Forestry Assessment, team analysis

0

The Office of the President assessed EVN through a bottom-up analysis of its land use opportunities and the 'economically rational' rate of deforestation. In the following section, the steps used to generate this estimate are described in greater detail, both in general terms and with specific reference to the case of Guyana.

⁶⁸ 80 percent confidence interval

⁶⁹ 10 percent discount rate is standard in forest valuation literature. See Appendix III for reference to other forest valuation studies using a 10 percent discount rate.

EVN Step 1: Assessing value of each component of EVN. This step involved gathering data for forested lands to estimate each of the four elements of EVN.

- **Standing timber value.** Valuation of timber stands is routine for timber investors and involves assessing likely yields of marketable species, extraction costs, and projected prices. Despite historical price volatility, mean price growth and variance assumptions can be extrapolated from past data and future market trends. However, many tropical countries lack robust timber inventories and their forests contain large numbers of lesser-known species for which the timber market lacks reliable price data.

To date, very strict sustainable forestry rules in Guyana have limited extraction to less than 20 m³ of timber per hectare over cycles as long as 60 years (implying an allowable cut of 0.33 m³ per hectare per year), but current forest inventories suggest that substantially greater quantities (60-70 m³ of valuable hardwood species such as greenheart, locust and mora could profitably be extracted.⁷⁰) This analysis assumes that loggers could extract 40m³ of commercially marketable species from each hectare of forest under a more permissive regulatory regime, and that the resulting timber could be exported at prices roughly comparable to those facing Guyana today.⁷¹ By applying existing structures for government revenue, including export levies, acreage fees and taxes on an unconstrained harvest, Guyana could generate substantially greater value from its timber resources than it does today, albeit at a major cost to the world in terms of lost carbon storage, habitat destruction and biodiversity loss. To make the standing timber value truly incremental, the projected value of continuing extraction under a sustainable harvesting regime is subtracted from this estimate.

- **Post-harvest land use value.** Data on soil quality, topography, and sub-soil mineral resources were used to identify plausible alternative land uses for forested land. Based on an informed assessment of alternative land uses and assumptions about future yields and prices, returns from alternative land uses were estimated for each region or geographical sub-unit in the country.

The soil beneath tropical forests tends to be thin and poor, and Guyana is no exception. However, Guyana's forests cover a variety of soil types, including some areas with rich soils and mineral deposits that could be exploited within two years of forest extraction. Agronomists suggest that by targeting the limited range of areas with 'Class 1' and 'Class 2' soils for agriculture, Guyana can prepare 2.9 million hectares of land for rice, fruit production, and other agricultural efforts as soon as two years after deforestation.⁷² On other land areas, palm oil, softwood pulp or hardwood tree plantations – which are ecologically poorer and store less carbon than natural forests – could be planted to generate post-harvest economic value. Similarly, through investments in gold mining equipment, local experts suggest that Guyana could extract at least 9.2 million ounces of identified gold deposits within 30 years.⁷³ These alternative land uses are, by construction, hypothetical, but they are plausible. Such

⁷⁰ Guyana Forestry Commission; company data

⁷¹ This is a partial equilibrium assumption that excludes from consideration the price impacts of other countries' decisions. Timber prices from International Tropical Timber Organization (ITTO)

⁷² Guyana Lands and Surveys Commission

⁷³ Metals Economics Group database

alternative uses are common in comparable countries, and the Government of Guyana has received – and declined – numerous approaches from investors seeking to develop agricultural, ranching and mining projects in forested areas.

- **Avoided protection costs.** By allowing unconstrained forest extraction, Guyana would avoid a cost of US\$2/ha for forest monitoring and protection.⁷⁴ This is lower than cross-national estimates of US\$4-9/ha from the Stern and Eliasch Reviews but represent the best available cost estimates for forest protection in Guyana.
- **Loss of local ecosystem services.** This is the most uncertain of the four elements of EVN for two reasons: the absence of a traded market for most ecosystem services, and limitations in scientific understanding of these services. A range of approaches were used to estimate potential locally realized losses from deforestation. Deforestation would eliminate a range of ecosystem services from forests, including natural watershed protection and revenue from non-timber forest products.⁷⁵ This analysis considers three of the most economically important ecosystem services forests provide in Guyana: flood management, non-timber forest products, and eco-tourism.
 - **Flood management.** Management of floods is one of the most important services forests provide in Guyana because the country's low-lying coastal regions are highly vulnerable to inland flooding. A simple estimate of the impact of deforestation on flood risk involves multiplying an estimate of the incremental flood risk associated with deforestation and the economic impact of flooding in Guyana. Recent research estimates that a 1 percent loss in forest cover will result in a 0.4 percent to 2.8 percent increase in frequency of a catastrophic flood.⁷⁶ An external assessment by the United Nations ECLAC of a catastrophic flood in 2005 (that cost Guyana 59 percent of its 2005 GDP) estimates approximately US\$450 million in GDP loss from such a flood. These estimates generate a ranged stream of expected incremental losses from flooding as forest cover declines.
 - **Non-timber forest products.** Many Guyanese citizens obtain value from non-timber forest products (NTFPs), such as wattles and manicoles (hearts of palm). Guyana currently exports US\$0.23/ha. of non-timber forest products harvested from standing natural forests.⁷⁷ Deforestation will deprive the country of the value of these products.
 - **Eco-tourism.** Eco-tourism is not a major driver of value today. Though this could change in the future, we assume that protecting 10 percent of the country's most attractive forest assets (e.g., Kaieteur Falls) to comply with protected area

⁷⁴ Estimate based on the cost of forest protection in Iwokrama, an international program area in Guyana focusing on sustainable rainforest use and conservation

⁷⁵ Ecotourism is not included in lost ecosystem services because all of Guyana's current planned ecotourism activity takes place in the ~1.5 million hectares of forest it has or plans to place under protection as national parks or wildlife preserves.

⁷⁶ Bradshaw, Corey et.al. 2007. "Global evidence that deforestation amplifies flood risk and severity in the developing world." *Global Change Biology*. Estimates probability of catastrophic flood in Guyana is twice in 10 years based on 1990 to 2000 data.

⁷⁷ Guyana Forestry Commission

obligations under the Convention on Biological Diversity will sustain an ongoing opportunity to develop Guyana's eco-tourism sector.

These categories are not exhaustive; deforestation obviously impairs other valuable services that standing forests provide, such as prevention of soil erosion and maintenance of water quality. In some specific areas (and regions of the world), the loss of local ecosystem services will be greater than estimated here. However, mitigating measures can be taken (e.g., prohibitions on deforestation near streambeds) to reduce these risks, and many alternative land uses involving plantation of new trees (e.g., palm oil or tree plantations) will partially mitigate loss of these services even where their negative impact on global ecosystem benefits such as biodiversity conservation or carbon storage is immense.

Using price and yield data from international sources and local topographic and geological information from Guyana's Lands and Surveys Commission, estimates were developed for each component of EVN for each hectare by region. The next step is to chart an economically rational deforestation path over time to project cash flows to the nation. (See Appendix I for data sources.)

EVN Step 2: Charting an 'economically rational' deforestation path. The present value of each component of EVN depends on the speed and sequence of deforestation, so estimating EVN requires charting a path that describes the trajectory of deforestation across geography and across time. While deforestation might not in practice follow a predictable path, it is possible to project a profit-maximizing path equivalent to the strategy a central planner might pursue in seeking to optimize returns to the country from deforestation and post-harvest land use. Because it is a value-maximizing strategy, this economically rational path yields the maximum return from forest exploitation, and therefore suggests an 'economically rational' rate of deforestation that can be used to estimate EVN.

Charting the economically rational path begins with drawing on the assessment of alternative land use developed in Step One. The planner generates a profit-maximizing harvesting path, where countries begin harvesting trees in regions with existing infrastructure and road access, thus creating a stream of income to be used in developing infrastructure in areas that are less accessible today.

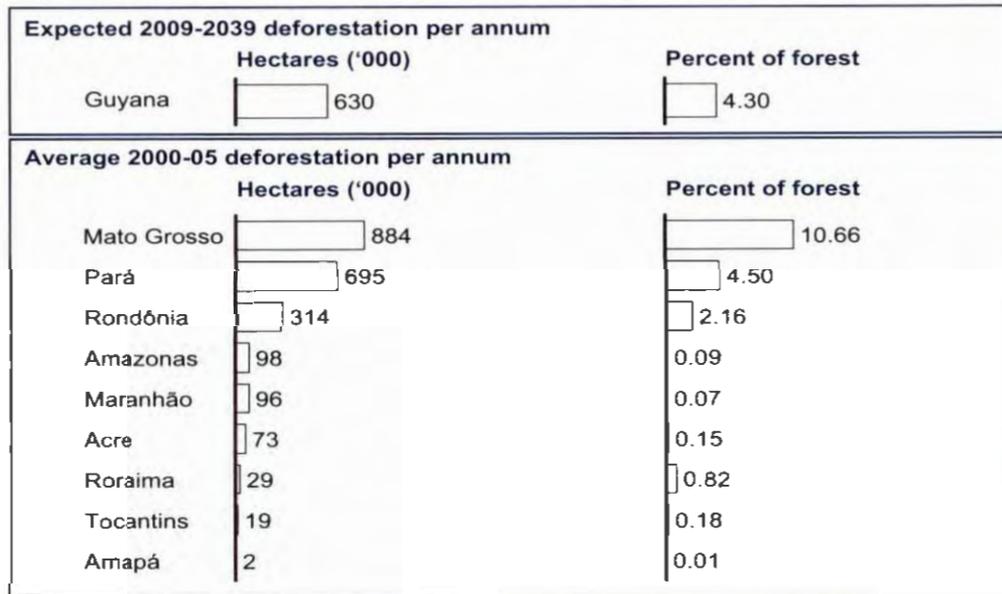
In the economically rational deforestation path, harvest occurs at the maximum rate consistent with the constraints of technical feasibility, market dynamics, and legal commitments. Technical feasibility constrains the rate of harvest because significant infrastructure development, labor movement and land preparation would be needed to execute the strategy. Additionally, anticipated production of commodities must not violate reasonable assumptions of market demand for increased timber, agriculture, and mineral commodities in any given year to avoid the risk of market flooding and price collapses. Lastly, international laws on forest protection (e.g., the Convention on Biological Diversity) and national agreements with indigenous communities are assumed to be honored.

In Guyana, we chart an 'economically rational' deforestation path that involves reducing forest cover by approximately 4.3 percent (~630,000 ha) per annum over the course of 25 years, leaving intact as protected areas the 10 percent of Guyana's forests with the highest conservation value. This rate of deforestation is comparable to deforestation in the nearby Brazilian states of Pará and Mato Grosso, which experienced even faster declines in forest cover between 2000 and

2005.⁷⁸ This deforestation trajectory is pursued on lands currently under the jurisdiction of the national government, excluding ~1.7 million hectares of forest under the jurisdiction of Amerindian communities.⁷⁹ The timing and sequence of deforestation across regions are influenced by distance to required infrastructure and major population centers.

Exhibit 12

GUYANA'S PROJECTED DEFORESTATION VS. BRAZILIAN STATES



Technical, economic and legal factors place an upper limit on how quickly and extensively to pursue a deforestation strategy. However, the path described is technically feasible, creates economic value, and is consistent with Guyana's international and national legal obligations.

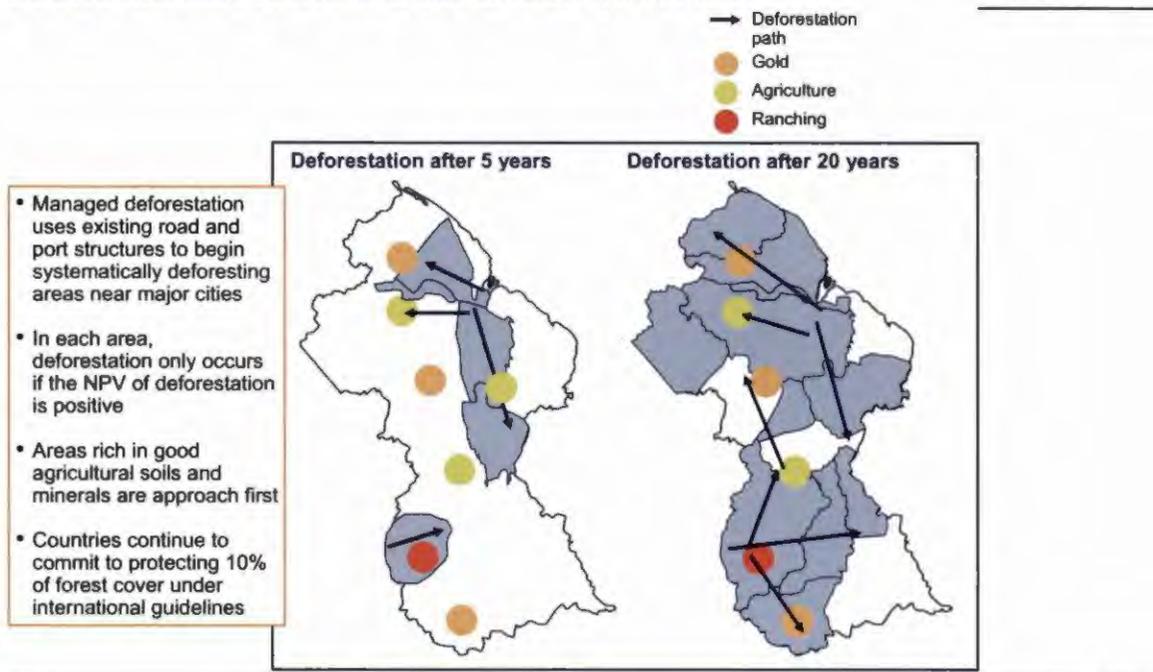
⁷⁸ Brazil National Institute for Space Research (INPE) Project PRODES

⁷⁹ This analysis excludes land, which is under the jurisdiction of Amerindian communities, plus land, which is planned to be placed under Amerindian jurisdiction. However, it is likely that Amerindian communities would elect to participate in REDD mechanisms - in these circumstances overall EVN, EVW and EVWc from within Guyana would increase.

Exhibit 13

ECONOMICALLY RATIONAL DEFORESTATION PATH

CONCEPTUAL



EVN Step 3: Developing probabilistic estimates of the EVN. Since future prices and yields driving cash flows are uncertain, Guyana's EVN is better represented as a probability distribution than as a point estimate. Statistical analysis suggests that Guyana's EVN is highly likely to fall between \$4.3 billion and \$23.4 billion (with a most likely estimate of \$5.8 billion, equivalent to a \$580 million annuity payment at a 10 percent real discount rate).⁸⁰ In other words, by protecting its forests, Guyana forgoes economically rational opportunities that could net it the equivalent of \$430 million to \$2.3 billion in additional value per year.

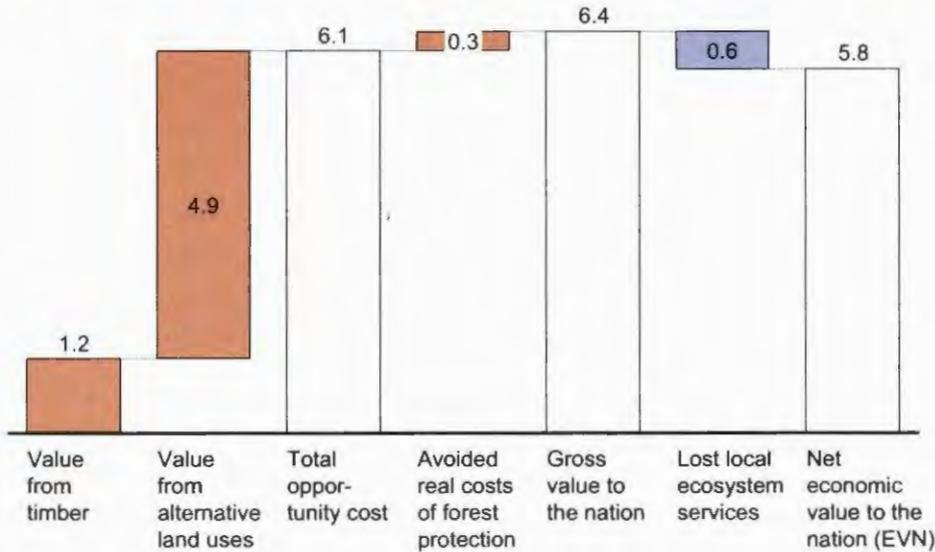
Most of this value comes from forgone opportunities to use land in more intensive ways, though a significant amount comes from the value of Guyana's standing timber. To give a sense of magnitude, the most likely estimate of EVN (\$5.8 billion in present value terms) is driven primarily by value from timber extraction (\$1.2 billion) and from post-harvest land use (\$4.9 billion), with a contribution from avoided costs of protection (\$0.3 billion) and a downward adjustment for the loss of local ecosystem services (\$0.6 billion).⁸¹

⁸⁰ Median 80 percent of simulated values

⁸¹ These values assume that Guyana's conversion of land to alternative uses does not impact global commodity prices, as Guyana will remain a "price-taker" in these markets (See appendix III on timber values). Whilst an argument exists that if all forested nations pursued a deforestation strategy, prices would fall (reducing EVN), the current economic pressures on the forest combined with the likely growing demand driven by population increases, may act to offset these.

Exhibit 14

GUYANA'S EVN IS DRIVEN LARGELY BY POST-HARVEST LAND USE

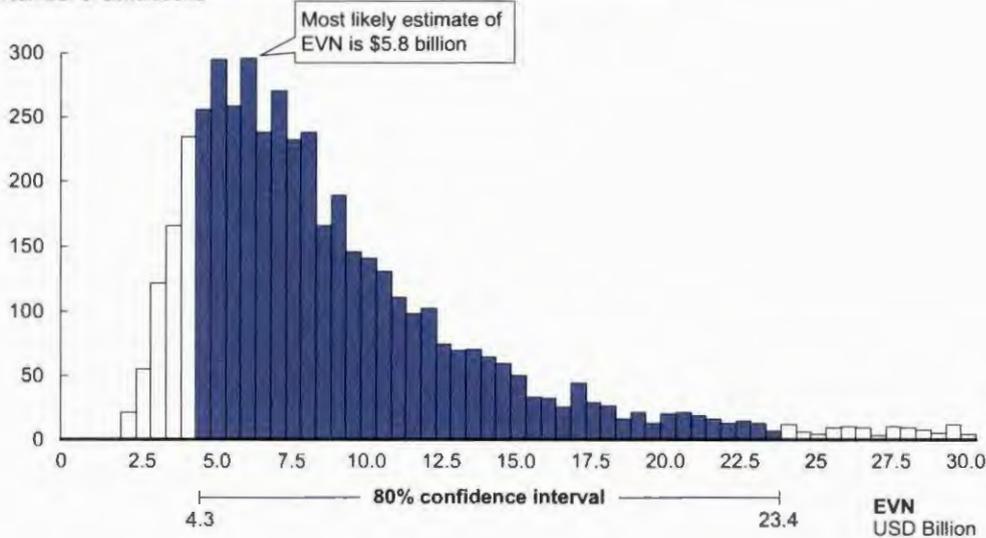


EVN's range of between \$4.3 billion and \$20.4 billion reflects variability driven by fluctuating prices for commodities such as logs, palm oil, and rice. Under favorable circumstances (such as a commodity price boom) the EVN could be even higher in the future, increasing pressure to deforest.

Exhibit 15

EVN IS LIKELY TO FALL BETWEEN \$4.3 AND \$23.4 BILLION

Frequency histogram of economic value to Guyana from deforestation
Number of simulations



Appendix III: Economic Value to the Nation (EVN) Methodology

This appendix outlines the calculations and key assumptions for the Economic Value to the Nation (EVN) calculation, including macro assumptions, standing timber value, post-harvest land-use profits, savings on protection costs, and loss of local ecosystem services.

Macro assumptions

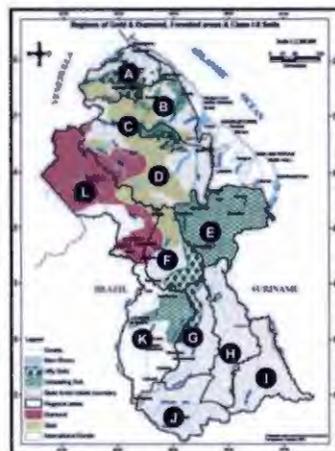
Inflation will continue at the historical average of 4.58 percent per annum seen from 2000-2007 despite high levels of fluctuations in some years.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Inflation	6.15	2.63	5.34	5.98	4.67	6.24	5.86	3.85	4.22

The assumed real discount rate is 10.0 percent based on a review of existing forest valuation literature (see Appendix III).

We assume Guyana's forest contain 342.78 tCO₂e per hectare based on the total carbon sequestration estimate from the 2005 FAO Forestry Assessment.

Guyana's forest was divided into 12 regions (marked A-L on map below) based on wood types, access, value of post-harvesting after-uses (e.g., based on soil quality and mineral deposits), and ownership.



Standing timber value

To determine the standing value of timber we base the assumptions on data secured from both within and outside of Guyana for forest regions, wood types, production costs, and government fees.

Forest regions

20 percent of Guyana's forest is non-productive, according to current estimates by the Guyana Forestry Commission, due to inaccessible mountain areas, streams, and other natural obstructions.

Guyana can extract 40m³ per hectare from productive forest areas based on inventories from leading concessionaires indicating marketable species may be as high as 69-79m³ per hectare.

Deforestation will not begin until Year 4 when regions D and E would be deforested and subsequent regions added based on infrastructure accessibility and value. Regions are deforested at a rate of 150,000 to 200,000 hectares per annum.

Region	Start year	End year
A	2020	2025
B	2014	2022
C	2014	2014
D	2013	2027
E	2013	2023
F	2020	2023
G	2020	2025
H	2026	2033
I	2024	2024
J	2020	2025
K	Amerindian	Amerindian
L	Amerindian	Amerindian

Wood types

Guyana's current ratio of wood types will remain constant throughout its managed deforestation plan.

Wood type	Share of timber input
Logs	67%
Sawnwood	15
Roundwood	4
Splitwood	1
Fuelwood	5
Plywood	8

Recovery rates for each wood type would remain the same as current rates.

Wood type	Recovery rate
Logs	100%
Sawnwood	40
Roundwood	100
Splitwood	33
Fuelwood	100

Domestic consumption of each product would remain at current absolute levels (~270,000 m³), growing with population at 0.24 percent per annum, resulting in negligible domestic consumption compared to exports.

Current average domestic and export prices as of June 2008 from the ITTO Guyana submissions are assumed as base prices.

Export and domestic prices grow at the same rate based on the maximum likelihood estimate of the best fit statistical model for real price growth from 1961 to 2005, adjusting using the United States CPI.

Wood type	Real price growth	Statistical fit model
Logs	0.79%	Log Logistic ($\lambda=-0.37$, $\alpha=0.36$, $\beta=5.46$)
Sawnwood	0.88	Wald ($\mu=0.44$, $\lambda=11.91$) Shift=-0.44
Roundwood	-0.22	Log Logistic ($\lambda=-0.37$, $\alpha=0.36$, $\beta=5.46$)
Splitwood	0.88	Log Normal ($\mu=0.49$, $\sigma=0.11$) Shift=-0.50
Fuelwood	1.62	Gumbel (location=-0.047, scale=0.11)
Plywood	-1.74	Gamma ($\alpha=47.73$, $\beta=0.013$) Shift=-0.64

Guyana would lose sustainable forestry value for each type of wood if it were to continue its current practices into perpetuity, growing at the above real prices.

Wood type	2007 sustainable forestry
Logs	\$20,847,246
Sawnwood	\$21,862,299
Roundwood	\$2,899,341
Splitwood	\$1,725,224
Fuelwood	~\$0
Plywood	\$8,877,001

Production costs

Capital investments are incurred one year in advance of timber harvesting to begin construction.

Costs are broken down by function based on current operators in Guyana:

Cost description	Cost (USD/m ³)	Cost type
Fixed management cost (overhead)	\$21.41	In-year
Road construction – primary	\$0.83	CapEx
Road construction – secondary	\$1.65	CapEx
Road maintenance – primary	\$0.10	In-year
Road maintenance – secondary	\$0.21	In-year
Harvesting cost to roadside	\$34.46	In-year

Log transport to mill	\$15.26	In-year
Sawmilling cost (inc. loader)	\$32.07	In-year
Sawmill licensing Fee	\$0.00	In-year
Sawmill Operating Fee	\$0.00	In-year
Kiln drying cost (inc. fork-lift)	\$25.70	In-year
Planer/moulder	\$14.60	In-year
Depreciation on mill equip.	\$1.14	CapEx
Transport to Georgetown	\$40.12	In-year
Storage and handling - Georgetown	\$5.80	In-year
Finance costs on capital	\$35.58	CapEx

Road and transport costs are multiplied by a factor to account for more expensive infrastructure requirements deeper in the forest:

Region	Transport cost factor
A	3x
B	2x
C	2x
D	3x
E	2x
F	2x
G	3x
H	4x
I	4x
J	4x
K	2x
L	4x

Government fees

Government of Guyana will continue to receive royalties on timber production and export commissions on timber sales at 2009 schedules:

Wood type	Royalties (USD/m³)	Export commission
Logs	1.65	10%
Sawnwood	7.29	2
Roundwood	0.33	2
Splitwood	0	2
Fuelwood	0.15	2
Plywood	0	2

Government revenue on foreign companies will continue to come from acreage fees (US\$0.37/ha.), licensing fees (US\$0.04/ha.), and corporate tax (35 percent).

70 percent of companies are expected to be foreign-owned, maintaining the current ratio of foreign to domestic companies.

Government of Guyana will need to continue to spend US\$4,490 per employee for monitoring and collecting fees at a rate of 0.13 employees per 10,000 hectares.

Post-harvest land-use profits

Assumptions made for agriculture, ranching, and mining are based on the factors of available land or deposits, costs and productivity, and forecasted prices.

Agriculture

Available land

Existing soil assessment maps indicate significant amounts of 'rich' arable soils in most regions of Guyana's forest.

Region	Class 1 undulating soil (ha.)	Class 1/2 hilly soil (ha.)
A	-	191,574
B	183,224	-
C	92,023	-
D	-	104,809
E	1,911,516	-
F	-	198,042
G	-	251,287
H	-	14,795
I	-	-
J	-	-
K	Amerindian	Amerindian
L	Amerindian	Amerindian

Rice is the most productive and likely product to be grown on Class 1 undulating soils given Guyana's history of rice production and growing demand for rice products in the world.

Class 1/2 hilly soils are equally divided between palm oil plantations and small-scale farming for high-end vegetables as the most likely positive NPV crops for Guyana to grow on these soils. Coffee and cocoa were tested but resulted in a negative NPV.

Costs and productivity

Yields for all products are based on historical averages reported by the FAO. For palm oil, average yields in other palm oil producing countries is used given there has been no palm oil production in Guyana to date.

Capital expenditure and land preparation costs are based on historical estimates for rice in Guyana according to current rice producers and the Guyana Rice Development Board. For all other products, 2007 Brazilian capital expenditure costs are drawn from the Agrianual survey.

Capital investments would need to take place on average 2 years prior to crop cultivation.

Operating profit margins are similarly based on historical margins for current rice producers and Brazilian producers for all other products according to the Agrianual survey.

Product	Yield (Mt/ha.)	Capex (USD)	Operating profit margin
Sugar	76.92	\$2,000	N/A
Rice	4.14	\$600	19.64%
Palm oil	4.00	\$498	18.75
Cocoa	0.26	\$3,978	39.59
Coffee	0.43	\$7,561	21.22
Vegetables	6.19	\$330	37.00

Forecasted prices

Prices for 2009 to 2018 are based on FAPRI 10-year market price projections by product.

Real price growth after 2018 is based on average real price growth from 1960 to 2007 according to FAO market prices, adjusted for inflation with the United States CPI.

Product	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sugar	\$262	\$276	\$269	\$270	\$273	\$277	\$280	\$281	\$283	\$285
Rice	\$463	\$479	\$486	\$499	\$510	\$515	\$517	\$520	\$521	\$531
Palm oil	\$1,004	\$1,026	\$1,057	\$1,081	\$1,110	\$1,146	\$1,185	\$1,229	\$1,275	\$1,319
Cocoa	\$1,551	\$1,632	\$1,716	\$1,805	\$1,899	\$1,998	\$2,102	\$2,211	\$2,326	\$2,447
Coffee	\$2,032	\$2,018	\$2,004	\$1,991	\$1,977	\$1,964	\$1,950	\$1,937	\$1,924	\$1,911
Vegetables	\$163	\$166	\$168	\$171	\$174	\$177	\$179	\$182	\$185	\$188

Product	Real price growth	Statistical fit model
Sugar	2.66%	Logistic ($\alpha=0.027, \beta=0.11$)
Rice	0.22	Log Logistic ($\lambda=-0.47, \alpha=0.45, \beta=5.44$)
Palm oil	2.29	Gumbel (location=-0.098, scale=0.21)
Cocoa	5.19	Beta ($\alpha_1=2.40, \alpha_2=10.08, \min=-0.36, \max=1.80$)
Coffee	-0.68	Beta ($\alpha_1=0.33, \alpha_2=0.34, \min=-0.32, \max=0.32$)
Vegetables	1.61	Gumbel (location=-0.078)

Ranching

Available land

There are no lands available on state forest for ranching.

Cost and productivity

Beef cattle yields are based on historical averages reported by the FAO.

Capital expenditure and land preparation costs are unavailable.

Capital investments would need to take place on average two years prior to cattle ranching.

Operating profit margins are based on historical margins for Brazilian ranchers.

Product	Yield (Mt/ha.)	Capex (USD)	Operating profit margin
Cattle beef	0.001423	N/A	30.0%

Forecasted prices

Prices for 2009 to 2018 are based on FAPRI 10-year market price projections for beef.

Real price growth after 2018 is based on average real price growth of beef from 1960 to 2007 according FAO market prices, adjusted for inflation with the United States CPI.

Product	2009	2010	2011	2012	2013
Beef	\$2,075	\$2,027	\$2,000	\$1,979	\$1,971
	2014	2015	2016	2017	2018
	\$1,987	\$2,017	\$2,053	\$2,096	\$2,138

Product	Real price growth	Statistical fit model
Beef	0.18%	Normal ($\mu=0.0018$, $\sigma=0.095$)

Mining

Available minerals

Mineral Economics Group (MEG) data indicates that 9.2 million ounces of gold have been identified for extraction in the forested lands.

Region	Land with gold (Ha.)	Identified gold (Ounces)
A	463,480	513,000
B	526,229	470,000
C	-	-
D	1,338,909	4,500,000
E	34,948	592,000
F	303,378	1,297,000
G	5,747	1,748,000
H	-	-
I	-	-
J	30,903	48,000
K	-	-
L	-	-

Deposits of other minerals are not known with any certainty and are thus excluded.

Costs and productivity

Capital expenditure costs are assumed at \$74.77 per ounce based on investments made for other small-scale mining operations in Guyana.

The MEG database indicates that operating costs in Guyana are \$260.00 per ounce.

We assume two years are required to put capital investments in place prior to mining.

Forecasted prices

Gold prices have fluctuated significantly throughout history with a dramatic rise recently.

We take 2009, 2010, and long-term consensus on gold price for 14 analysts. We assume the long-term price will be achieved by 2015 and will remain constant in real terms thereafter.

Product	2009	2010	2011	2012	2013
Gold	\$750	\$883	\$838	\$796	\$756
	2014	2015	2016	2017	2018
	\$717	\$681	\$681	\$681	\$681

Product	Long-term price	Statistical fit model
Gold	\$681	Normal ($\mu=681, \sigma=55.80$)

Savings from protection costs

Interviews with Iwokrama, an international rainforest conservancy, indicate that under optimal circumstances, they would require US\$2 per hectare for protection of their wildlife preserve. Iwokrama is an internationally recognized conservation research concession offered to the world by Guyana as an area to study sustainable forest management and ecosystem services.

The US\$2 is conservative compared to the cost of administration of payment for ecosystem services schemes in other countries, ranging from US\$4 to \$9 according to Grieg-Gran for the Eliasch Review (2008).

Loss of local ecosystem services

Flood risk is estimated based on analysis conducted by Bradshaw, et. al. (2007) based on a review of catastrophic floods around the world. They find that a 10 percent decrease in forest cover results in a 3.5 to 28 percent increase in flood frequency when controlling for steepness and precipitation.

For Guyana, Bradshaw indicates that two major floods occurred between 1990 and 2000, implying a 20 percent baseline probability of flooding in any given year.

We assume an average relationship of 15.8 percent increase in flood frequency for every 10 percent decline in forest cover.

A study by the United Nations Economic Commission for Latin America and the Caribbean indicated in 2005 that a catastrophic flood destroyed much of the coastal area near Georgetown, resulting in a loss of US\$452 million, or 60 percent of Guyana's GDP.

We assume this economic damage keeps pace with inflation as the potential damage from a catastrophic flood.

Data sources used in modeling assumptions

Soil quality and crop feasibility:

Soil quality data and crop feasibility assumptions from Guyana Lands and Surveys Commission using FAO classifications.

Timber value:

Historical export prices for raw logs, sawnwood, roundwood piles, and plywood from FAOSTAT World Export Prices

Domestic prices for raw logs, sawnwood, roundwood piles, and plywood from Guyana Forestry Commission submission to ITTO

Post-harvest alternative land use:

Historical export prices for rice, coffee, fruits and vegetables, cocoa, palm oil from FAOSTAT World Export Prices

Historical yield levels for Guyanese products from FAOSTAT Production database and non-Guyanese products from Brazil Agriannual 2007.

Appendix IV: Forest valuation studies using 10 percent discount rate

Bann, C. 1997. An Economic Analysis of Tropical Forest Land Use Options: Ratanakiri Province, Cambodia. Singapore: Economy and Environment Program for Southeast Asia.

Grieg-Gran, M. 2008. The Cost of Avoiding Deforestation. London: International Institute for Environment and Development (*work basis of 10 percent discount rate cited in Stern Report and Eliasch Review*)

Godoy, R. and Lubowski, R. 1992. Guidelines For The Economic Valuation Of Non-Timber Tropical-Forest Products, *Current Anthropology*, 33(4), August-October, 423-433.

Howard, A.F, and Valerio, J. 1996. Financial Returns From Sustainable Forest Management And Selected Agricultural Land-Use Options In Costa Rica, *Forest Ecology and Management*, 81, 35-49

Kremen, C., Niles, J., Dalton, M., Gaily, G., Ehrlich, P., Fay, J., Grewal, D and Guillery, R. 2000. Economic Incentives for Rain Forest Conservation Across Scales, *Science*, 288, 1828-1832

Pearce, D.W. 1994. Assessing the Social Rate of Return from Investment in Temperate Zone Forestry, in R.Layard and S.Glaister (eds), *Cost-Benefit Analysis*, Second edition, Cambridge: Cambridge University Press, 464-490

Simpson, D., Sedjo, R. and Reid, J. 1996. Valuing Biodiversity for Use in Pharmaceutical Research. *Journal of Political Economy* 104 (1), pp. 163-185

Wunder, S. 2000. *The Economics of Deforestation: the Examples of Ecuador*, London: Macmillan

Yaron, G. 2001. Forest, Plantation Crops or Small-Scale Agriculture? An Economic Analysis of Alternative Land Use Options in the Mount Cameroun Area, *Journal of Environmental Planning and Management*, 44 (1), 85-108

Appendix V: Status of Amerindian Lands

Titled Amerindian Villages

REGION	Villages with Communal Land Title	TITLED	DEMARCATED	EXTENDED
1	Arukamai	YES	YES	
1	Assakata	YES	YES	
1	Baramita	YES	APPLIED	
1	Barima Koriabo	YES	YES	
1	Bumbury Hill	YES	YES	
1	Chinese Landing	YES	YES	
1	Hobodia	YES	YES	APPLIED
1	Hotoquai	YES	YES	APPLIED
1	Kamwatta	YES	YES	YES
1	Kokerite	YES	YES	
1	Kwebanna	YES	YES	
1	Manawarin	YES	APPLIED	APPLIED
1	Red Hill	YES	YES	APPLIED
1	Santa Cruz	YES	YES	APPLIED
1	Santa Rosa	YES	YES	APPLIED
1	Sebai	YES	YES	
1	Three Brothers	YES	APPLIED	
1	Tobago	YES	YES	
1	Waikrebi	YES	YES	
1	Waramuri	YES	NO	
1	Warapoka	YES	YES	YES

1	Whitewater	YES	YES	
1	Yarakita	YES	YES	
2	Akawini	YES	YES	APPLIED
2	Bethany	YES	YES	APPLIED
2	Capoey	YES	YES	APPLIED
2	Kabakaburi	YES	YES	YES
2	Mainstay/Whyaka	YES	YES	APPLIED
2	Mashabo	YES	YES	APPLIED
2	Tapakuma	YES	YES	YES
2	St. Monica incl. Karawab	YES	YES	APPLIED
2	Wakapoa	YES	YES	APPLIED
3	Santa Aratak	YES	YES	
4	St. Cuthberts Mission	YES	YES	
5	Moraikobai	YES	YES	
6	Orealla/Siparuta	YES	YES	YES
7	Karrau	YES	YES	APPLIED
7	Kaburi	YES	YES	
7	Isseneru	YES	YES	
7	Jawalla (incl. Qwebanang)	YES	NO	
7	Kurutuku	YES	APPLIED	
7	Arau	YES	NO	APPLIED
7	Kaikan	YES	NO	
7	Paruima	YES	NO	
7	Waramadong	YES	NO	
7	Warawatta/Kamarang	YES	NO	
7	Kako	YES	NO	
7	Phillipai	YES	NO	
7	Chinoweing	YES	NO	

8	Chenapou	YES	NO	
8	Kopinang	YES	YES	
8	Waipa	YES	YES	
8	Kaibarupai	YES	YES	
8	Kamana	YES	APPLIED	
8	Kurukabaru	YES	YES	
8	Itabac	YES	APPLIED	
8	Kanapang	YES	APPLIED	
8	Kato incl. Chieung Mouth	YES	YES	APPLIED
8	Paramakatoi (incl. Bamboo Creek and Mt. Foot)	YES	A PPLIED	
8	Monkey Mountain	YES	YES	APPLIED
8	Taruka	YES	APPLIED	
8	Fairview	YES	YES	
8	Campbelltown	YES	YES	
8	Micobie	YES	YES	
9	Annai	YES	YES	YES
9	Apoteri	YES	YES	
9	Crashwater	YES	YES	
9	Toka	YES	APPLIED	
9	Yakarinta	YES	YES	YES
9	Massara	YES	YES	YES
9	Rewa	YES	YES	
9	Yupukari	YES	YES	APPLIED
9	Katoka	YES	APPLIED	APPLIED
9	Nappi	YES	YES	APPLIED
9	St. Ignatius	YES	YES	
9	Moco Moco	YES	YES	APPLIED
9	Parikwarunau	YES	YES	

9	Potarinau	YES	YES	APPLIED
9	Schulinab	YES	APPLIED	
9	Sawariwau	YES	APPLIED	
9	Rupanau*	YES	APPLIED	
9	Sand Creek	YES	YES	APPLIED
9	Shea	YES	YES	
9	Awarewaunau	YES	YES	APPLIED
9	Maruranau	YES	YES	APPLIED
9	Aishalton	YES	YES	
9	Karaudaranau	YES	YES	APPLIED
9	Achawib (incl. Bashanzon)	YES	YES	
9	Konashen	YES	APPLIED	
9	Karasabai	YES	YES	APPLIED
10	Hururu	YES	YES	
10	Wikki/Calcuni	YES	YES	
10	Wiruni	YES	YES	
10	Great Falls(#58)	YES	YES	
10	Malali	YES	YES	
10	Muritaro	YES	YES	
	* Rapunau village titling approved and is processing			

Satellite Villages

Village	Location
Kumaka/Rincon	Moruca Reg. 1
Koko	Moruca Reg. 1
Kamwatta	Moruca Reg. 1
Parakese	Moruca Reg. 1
Karaburi	Moruca Reg. 1
Santa Rosa/Islands	Moruca Reg. 1
Mora	Moruca Reg. 1
Huradiah	Moruca Reg. 1
Haimacabra	Manawarin Reg.1
Siparuta	Region #6
Quebenang	Reg # 7
Chiung Mouth	Reg # 8
Bamboo Creek	Reg # 8
Mountain Foot	Reg # 8
Annai Central	Reg #9
Surama	Reg # 9
Wowetta	Reg # 9
Rupertee	Reg # 9
Kwatamang	Reg # 9
Kwaimatta	Reg # 9
FlyHill	Reg # 9
Kaicumbay	Reg # 9
Quatata	Reg # 9
Semonie	Reg # 9
Kumu	Reg # 9
Quarrie	Reg # 9
Parishara	Reg # 9
Hiawa	Reg # 9
Katuur	Reg # 9
Baitoon	Reg # 9
Shiriri	Reg # 9
Quiko	Reg # 9
Meriwau	Reg # 9
Bashauzon	Reg # 9
Churikadnau	Reg # 9
Paipang	Reg # 9

Untitled Amerindian Communities

No.	Region	Villages
1	1	Eclipse Falls
2	1	Four Miles
3	1	Kariako
4	7	Batavia
5	7	Kambaru
6	7	Tassarene
7	7	Kangaruma
8	8	Tuseneng
9	8	Karisparu
10	9	Katoonarib*
11	10	Riversview
		* village occupies what was surveyed as Sawariwau

Amerindian Settlements

Settlement	Location
Tassawini	Moruca Sub Region Regon # 1
Five Star	Moruca Sub Region , Reg. # 1
Almond Beach	Moruca Sub Region, Reg # 1
Barbena	Mabaruma Sub Region, Region # 1
Almond Beach	Mabaruma Sub Region, Region # 1
Powaikuru	Mabaruma Sub Region, Region # 1
Black Water/lower Barima	Mabaruma Sub Region
Imboterio	Mabaruma Sub Region
Koberimo	Mabaruma Sub Region
Father Beach	Mabaruma Sub Region
Lower Koriabo	Mabaruma Sub Region
Aruau	Mabaruma Sub Region
Kamwatta (Eyelash)	Mabaruma Sub Region
Canal Bank	Martakai Sub Region, Region # 1
Big Creek	Martakai Sub Region
White Creek	Martakai Sub Region
Dogg Point /Agatash	Middle Mazaruni Region # 7
Wax Creek	Region # 7
Princeville	Region # 8
El Passo / Tumatumari	Region # 8

The Process for Amerindian Lands

The Amerindian Act 06, of 2006, now guarantees an enhanced policy on the Amerindian Land rights and demarcation of Amerindian lands with the full participation of the community members and their leaders. Outlined below are the process and standard procedure;

The applications for extension and grant of title must be submitted in writing to the Minister of Amerindian Affairs with simple details of the land area and community and encourages full participation and engagement of Amerindians in the process. Amerindian groups can submit a request for communal land ownership based on several set criteria.

Under the Amerindian Act 6 of 2006 pg. [Part VI Clause 59(1)], the following information must be provided:

1. Extension of Land
 - a. The name of the village
 - b. The number of persons in the village
 - c. The area of land which the village already owns
 - d. The reason for the application
 - e. A description of the area and
 - f. A copy of a resolution passed by two-thirds of the village general meeting, which authorizes the Village Council to make the application.

2. Grant of Land

Under the Amerindian Act 6 of 2006 Clause 60(1) to 64, the following conditions must be met.

- a. The community has been in existence for at least twenty-five years
- b. At the time of the application and from the five years immediately preceding, the community must comprise at least one hundred and fifty people

Standard Procedures for the Granting of Land Titles to an Amerindian Community

Land Grant

1. As per the Amerindian Act, the community must write to the Minister of Amerindian Affairs requesting title to the lands they use and occupy. The request must be accompanied by a sketch of the area being requested and /or a description of the area.
2. The Minister checks that the request is in keeping with the requirement of the Amerindian Act
3. The Minister acknowledges request from the community
4. The Minister writes to the Guyana Lands and Surveys Commission (GLSC) requesting
 - a. A sketch /description be converted to scaled map
 - b. That the GLSC provides the Ministry of Amerindian Affairs with the names of lessee in the area requested, if any.

5. The Minister sends the map to the Guyana Forestry Commission (GFC) and Guyana Geology and Mines Commission (GGMC) requesting them to indicate their comments / concerns
6. Upon the receipt of the notification from the GFC and the GGMC (whichever is applicable), the Ministry does one of the following;
 - a. If in the view of the Minister, the area being requested is reasonable, the request is submitted to the Cabinet Sub-Committee on Amerindian Affairs/Natural Resources for no-objection.
 - b. If the area requested is excessive, the Minister will commence negotiation with the community. Once negotiation is complete, step (i) is followed
7. Request is submitted to Cabinet
8. Cabinet approves the request
9. Cabinet decision is issued to GLSC and MOAA
10. Minister of Amerindian Affairs writes to GLSC requesting that the Grant be prepared
11. Plan and Grant are prepared and submitted to the Head of the Presidential Secretariat for signature
12. President issues the Grant.

The Ministry of Amerindian follows a set of standard procedures that supports the implementation of the demarcation programme, this is detailed below;

The Process of Demarcation

1. The Community writes to the Minister of Amerindian Affairs requesting that their title lands be demarcated
2. MoAA indicates community's agreement to the Guyana Lands & Surveys Commission and asks that the process for surveying commences
3. GLSC advertise for surveyors or utilizes in-house surveyors
4. Contractor selected
5. GLSC advises Minister of the Contractor's readiness to commence survey
6. MOAA informs community of the contractor to conduct the survey and introduces surveyor to the community. (3 persons from the village Council must be on the survey team).
7. Survey completed and plan prepared
8. GLSC advises the MOAA of the completed survey
9. Minister of Amerindian Affairs submits Plan to the Registry and requests that title be prepared
10. Title is prepared and delivered to the MOAA
11. Title is issued to the Communities

Appendix VI: Implementing the Monitoring, Reporting and Verification (MRV) System

Work has commenced on defining the requirements for a comprehensive and appropriate Monitoring, Reporting and Verification (MRV) System for forest carbon stock in Guyana. Under the Guyana REDD+ Investment Fund (GRIF), a major activity that has to be conducted is managing and monitoring of forestry payments. This requires for a mechanism to be developed that ensures appropriate fiduciary oversight of funds – where contributors can have confidence that appropriate payments will be predictable and performance driven. As such, the LCDS stipulates that disbursements to the GRIF will be in accordance with strict performance agreements, using information from an internationally verifiable MRV system.

To commence activities on developing an MRV system for Guyana and building capacity in this area, two workshops were held with national and international stakeholders. On 14-15th September, 2009 a number of international experts were invited to Guyana to advise on the process of MRVS development. Emanating from this workshop, a general framework was developed for the main components of the system. Continuing the work of developing the system, a workshop of national experts and stakeholders, and a series of consultations with relevant agencies was conducted during 27-29 October 2009 in an effort to prepare Guyana for its participation in a REDD+ mechanism. This workshop saw the participation of key natural resources agencies, non-governmental partners, representatives from the National Toshias' Council and Indigenous People's Associations, among others.

The cooperation between the Governments of Norway and Guyana, which was formalized in the signing of the Memorandum of Understanding on 9th November, 2009 in Fairview Village, expresses a willingness to work together to provide the world with a relevant, replicable model for how REDD-plus can align the development objectives of forest countries with the world's need to combat climate change. The initiative will require the development of capacities for monitoring, reporting and verification (MRV) of forest carbon stocks and changes. In this context, the overall goal of the activities is to develop a road map for the development of an MRV system for REDD+ participation for Guyana. The development of such a road map considers several aspects that have been elaborated in the facilitation process and in the terms of reference for developing an REDD MRV system:

1. Requirements of an MRV system:

- The accepted principles and procedures of estimation and reporting of carbon emissions and removals at the national level should meet criteria specified by the IPCC Good Practice Guidelines and Guidance for reporting on the international level;
- The particulars of the national REDD implementation strategy that has been selected should be taken into account, since different activities have different MRV implications;

2. Bridging the capacity gap through a detailed plan to establish sustained MRV capacities within the country requires:

- Capacity gap assessment based on the state of the existing national forest monitoring technical capabilities and the requirements for the MRV system;
- Development of a road map and its implementation through a sustained and efficient institutional framework including competence in measuring and monitoring at different levels, support for national policies and REDD+ actions, international reporting and verification, and linking MRV of actions with MRV of transactions.

The outcomes have resulted in the definition of a MRV capacity development roadmap that follows a set of general requirements and principles:

- The overall goal is a process of capacity building to establish sustained MRV for implementing REDD policies and results-based compensation for such activities in the long-term, as a contribution to Guyana's low carbon development pathway and support for the sustainable development of natural resources;
- The development of a national REDD+ MRV system uses a phased approach along a roadmap that specifies near-term priorities and long-term targets, builds upon existing capacities and data, international requirements and national needs, and has the objective to support annual estimation, reporting and verification of forest-related carbon emissions and removals on the national level,
- The evolution of the MRV system is directly linked with REDD+ policy development and implementation and contains a systematic national monitoring, reporting and verification system and a sub-national program to support MRV for local REDD+ activities;
- A strong institutional set up and the establishment and maintenance of partnership and cooperation on all levels as an enabling framework.

Seven specific areas were identified where activities are recommended for the first phase and should start as soon as possible:

- Development and implementation of a national mechanism and institutional framework
- Implementation of a comprehensive forest area change assessment for historical period
- Building of carbon stock measurement and monitoring capacities
- Development of an MRV for a set of sub-national REDD demonstration activities
- Engagement with the international community
- Sustaining of an internal and national communication mechanism
- Conducting and supporting research on key issues

Capacity gap assessment and key actions

During the workshop considerable emphasis was placed on assessing current data availability and capacities and how they relate to requirements for REDD+ participation. The evaluation of Guyana's capacities and REDD specific characteristics provide the basis of specifying the recommendations and next steps for the MRV system development. Starting with an assessment of current capacities, additional information on country-specific characteristics and requirements for REDD were analyzed and discussed. The capacity gap assessment was performed for both international requirements (IPCC GPG) and national needs (through an assessment of current forest change processes).

As synthesis of the capacity gap assessment, the national MRV development principles and the discussion sessions at the workshop, seven key action areas were defined as immediate activities for starting the capacity development for Guyana:

1. Develop and implement a national mechanism and institutional framework:
 - Steering body for the MRV system development (Office of Climate Change, Office of the President as coordinator of activities)
 - Coordination and integration of national datasets through a high-level national technical committee accompanied by a related legislative reform and development of a national data management system and infrastructure
 - Participation, scientific advice and international partnering, i.e. through the establishment of a technical and scientific advisory group
2. Conduct a comprehensive forest area change assessment for a historical period:
 - Processing and interpretation of historical archived satellite datasets at national level for forest area change, benchmark forest map and exploration of the monitoring of forest degradation
 - Capacity building component included from the beginning
3. Build carbon stock measurement capacities:
 - Design a national and sub-national stratification
 - Design Protocols and implement measurements in all carbon pools
 - Targeted sampling and surveys to establish national conversions/expansion factors
4. Develop MRV for a set of REDD demonstration activities
 - Focus on key drivers/processes and engagement with implementation actors (i.e. land owners, communities)
 - Conduct detailed monitoring at demonstration sites
5. Engagement with international community:
 - Explore the possibility of the GEO Task to help in satellite data acquisition from 2009 onwards
 - Partner with international organizations and research partners
 - Seek further advise/coordination with international activities
6. Sustained internal communication mechanism on MRV:
 - Development communication plan and outreach materials
 - Conduct a series of regional workshops and consultation to inform about REDD and MRV
7. Conduct/support research on key issues
 - Scoping exercise for linking policy and MRV (actions, transactions)
 - Detailed national driver assessment and methods for reference level projection
 - Co-benefits of MRV (i.e. to support LCDS) and tools for decision-support in the context of integrated natural resources management

The execution of the work will be centralized at the Guyana Forestry Commission and this agency will be the focal agency for coordinating all aspects of data collection, analysis, research execution and assessments and for routine and continuous monitoring of the system. This agency will work with all consultants, data providers and suppliers, and stakeholders of the MRVS.

MRV capacity development roadmap

The development of a road map for the establishment of a system for measurement, reporting, and verification (MRV) as an initial investment to participate in any REDD mechanism requires the consideration of a number of necessary steps and different types of gaps to be addressed in different phases. This road map lists expected outcomes and capacity improvements for these different phases, as well as a set of specific activities to fill four different types of gaps. The MRV Road Map showing objectives and expected key results as well as a specification of activities for gap filling are presented in the tables in this Appendix.

These have collectively informed the development of the Terms of Reference for the MRV System and have also informed the drafting of invitations to bids which should be advertised soon.

Key results and national capacities developed	Objectives	
<ol style="list-style-type: none"> 1. Comprehensive MRV roadmap developed and national MRV steering body operational 2. Improved national capacities on LCDS, REDD, IPCC-LULUCF, and carbon dynamics 3. Framework and capacities to demonstrate REDD implementation and interim performance 4. All data available and accessible (including acquisition of new forest carbon data) on drivers and processes needed for developing a national REDD policy and interim implementation plan 5. Established communication and participation mechanism to involve relevant stakeholders nationally and internationally 6. Approaches for setting reference levels, linking MRV and policy, and MRV co-benefits and synergies are explored and defined 	<p>Gather and integrate information & fill data gaps for national REDD opportunities, scoping and policy development</p>	<p>National strategy (2010) →</p>
<ol style="list-style-type: none"> 1. Capacities in place for consistent and continuous acquisition and analysis of key data for Tier 2 nationally and Tier 3 for demonstration/activity sites including international reporting using IPCC LULUCF; uncertainty assessment MRV improvement plan developed 2. Reference level established based on historical data, and future developments using internationally accepted methods 3. All data available and accessible for an updated national REDD implementation plan 4. Regular reporting on REDD demonstrations and interim performance 5. Continued engagement with key national stakeholders for REDD implementation and assuring long-term sustainability of MRV capacities (i.e. universities) 6. Monitoring system explored to cover key variables for other ecosystem services 	<p>and implement a (minimum) IPCC Tier 2 national forest carbon monitoring, establish the reference level and</p>	<p>Country readiness (2011/12) →</p>
<ol style="list-style-type: none"> 1. IPCC key category analysis and assessment for Tier 3 approaches completed and implemented (if desired) 2. Independent international review of full MRV system completed 3. Capacity in place and implementation to deliver verification and compliance assessment for REDD results-based compensation 4. National data infrastructure of forest greenhouse gas inventory and assessment in place for regular reporting 5. Implementation plan to use new and proven technologies to reduce uncertainties and increase efficiency of MRV system 6. Framework developed that links REDD into LCDS monitoring, reporting and verification system 	<p>and continuous MRV supporting national REDD+ actions and international IPCC GPG-based reporting and</p>	<p>Implementation (post 2012) →</p>

MRV road map – specification of activities for gap filling

	National strategy →	Country readiness →	Implementation →
Objectives	Gather and integrate information & fill data gaps for national REDD opportunities scoping and policy development	Develop capacities, conduct historical monitoring, and implement a (minimum) IPCC Tier 2 national forest carbon monitoring, establish the reference level and report on interim performance	Establish consistent and continuous MRV supporting national REDD+ actions and international IPCC GPG-based reporting and verification
Data gap filling	<p>Gather, evaluate and integrate existing data sources on the national level</p> <p>Acquire additional data (if needed) to analyze (the carbon impact) of all relevant historical forest change processes and drivers (i.e. using satellite data, initial carbon stock assessments and ancillary information)</p> <p>Assessment of historical and current processes of forest carbon change for formulating national REDD policy strategy and related MRV priorities, and respond to an initial set of interim performance indicators</p>	<p>Establish mechanisms and partnerships with relevant data sources (i.e. satellite data) to facilitate availability to Guyana in a consistent and continuous way</p> <p>Data gathering and analysis of drivers and factors of forest carbon change to support an assessment of future driver activities and related/projected forest carbon changes</p> <p>Collect data for a first comprehensive uncertainty assessment of the different measurement and monitoring components</p>	<p>Conduct an IPCC key category analysis</p> <p>Assess opportunities and data gaps to move towards Tier 3 on the national or sub-national (if desired)</p> <p>Foster and support REDD activity-based monitoring by different actors as part of national framework</p>
Eligibility gap filling	<p>Develop a national REDD strategy</p> <p>Involvement of all relevant stakeholders at the national and sub-national level – set up a sustained two-way communication mechanism</p> <p>Participation in international REDD and REDD readiness processes</p> <p>Scope a framework for immediate demonstration actions and interim performance indicators that will respond to an international REDD mechanism</p>	<p>Continued involvement of all relevant stakeholders at the national and sub-national level</p> <p>Provide an assessment of carbon emissions (and removals) as historical reference level and expectations/forecasting future development</p> <p>Develop a national implementation plan and related policies to encourage REDD actions by relevant stakeholders</p> <p>Implement and evaluate REDD implementation activities, and report performance for interim indicators</p>	<p>Implement an international review of the MRV system</p> <p>Prepare regular interactions and reporting on REDD implementation activities and on the IPCC LULUCF inventory</p> <p>Verification and compliance assessment comparing performance against the reference level</p>

Capacity and institutional gap filling	Complete an comprehensive assessment of existing data and capacities considering international and national MRV requirements	Build sustained capacities to conduct regular and consistent forest and forest area change monitoring using remote sensing and GIS	Continuous training and improvement for institutions and activities providing data and analysis for the REDD MRV system,
	Set up a national MRV coordination mechanism to steer the capacity development and assign roles and responsibilities	Establish capacities and implement a systematic national forest carbon measurement and monitoring system, i.e. through permanent sample plots.	Build a national spatial data infrastructure for IPCC LULUCF reporting and REDD implementation
	Develop capacities to monitor given a set of interim performance indicators	Scope and evaluate a sub-national, activity-based measurement program, to monitor key REDD implementation actions	Develop additional monitoring capacities (if needed, to go for Tier 3)
	Engage in general capacity building on REDD, IPCC-LULUCF, terrestrial carbon dynamics and key standard methods	Training and implementation of reporting (IPCC LULUCF) including an institutional framework	Build a system for verifying REDD actions on the national level using MRV data and other information, link MRV of transactions
	Interaction with local actors and key implementation bodies on their role for MRV	Develop and implement an uncertainty assessment and a long-term improvement plan for the MRV system	Develop and implement an uncertainty assessment and a long-term improvement plan for the MRV system
Methodological gap filling	Interaction and partnership with national and international research organizations on key issues	Interaction and partnership with national and international research organizations on key issues	Foster activities to reduce uncertainties and increase efficiency of MRV system
	Exploration of methods and approaches for establishing reference levels	Develop frameworks for interlinked implementing REDD policies and MRV and linking MRV of actions and MRV of transactions	Implement evolving technologies into regular REDD MRV activities
	Evaluate concepts for linking MRV, REDD policy and implementations	Exploration of evolving technologies for REDD MRV	Finalise exploration of REDD MRV and implementation including broader ecosystem services and environmental accounting procedures and make recommendations.
	Explore potential co-benefits and synergies of the carbon measurements with other monitoring needs	Assess the requirements of monitoring carbon variables and relevant information for other ecosystem services	