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**INTER- AMERICAN DEVELOPMENT BANK**

**GUYANA**

**ENVIRONMENT SECTOR STRENGTHENING – II**

**GY-L1043**

**PBP Economic Evaluation**

**Georgetown, October 2014**

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ABBREVIATIONS

ASM Artisanal and Small-scale gold Mining

EITI Extractive Industry Transparency Initiative

EPA Environmental Protection Agency

EU-FLEGT European Union Forest Law Enforcement, Governance and Trade

EVN Economic Value to the Nation

EVW Economic Value to the World

FAO Food Agriculture Organization

FCPF Forest Carbon Partnership Facility

FDI Foreign Direct Investment

GFC Guyana Forestry Commission

GGMC Guyana Geology and Mines Commission

GLSC Guyana Lands and Survey Commission

GoG Government of Guyana

GRIF Guyana REDD+ Investment Fund

HDI Human Development Index

IDB Inter-American Development Bank

JCN Joint Concept Note, Government of Norway & Government of Guyana

LAC Latin American and the Caribbean

LCDS Low Carbon Development Strategy

MNRE Ministry of Natural Resources and Environment

MOF Ministry of Finance

MOU Memorandum of Understanding

MRVS Monitoring, Reporting, and Verification System

MSSC Multi-Stakeholder Steering Committee

OC Ordinary Capital

PBL Policy Based Loan

PBP Programmatic Policy Based Loan

REDD+ Reducing Emissions from Deforestation and Forest Degradation

UNDP United Nation for Development Program

UNFCCC United Nations Framework Convention on Climate Change

VPA Voluntary Partnership Agreement

WB World Bank

**GUYANA**

**ENVIRONMENT SECTOR STRENGTHENING II (GY-L1043)**

**PBP Economic Evaluation**

# Summary

The economic evaluation is intended to verify the economic viability of the proposed PBP through the anticipated results and impacts. The estimate of the benefits generated in the economy of Guyana and forest-based exploitation sectors is the result of the comparison of the following two scenarios: (a) what emerges from the interventions linked to the political commitments agreed upon in the PBP (defined as the with-project scenario),; and (b) in relation to the expected economic situation in the absence of the policies (defined as the without-project scenario).

The policy changes implemented through this PBP will strengthen the governance and policy framework that supports the implementation of the LCDS. Most of the reforms considered focus on improving environmental institutional performance; policy commitments encompass laws, regulations, and norms that aim at improving coordination among actors, increasing efficiency, and broadening access to better environmental and natural resources management in priority sectors.

From a global perspective, each one of the 4 components that comprise the PBL contributes to sustaining the political drive aligned with the objectives set forth in the MoU, the REDD+ and the LCDS. Maintaining a stable macroeconomic framework (Component 1) will contribute to sustaining an atmosphere that encourages private investment and will facilitate access to new sources of financing; progress with regard to the regulatory framework (Component 2), institutional strengthening (Component 3) and verification tools (Component 4) will define the strategy and maintain alignment with the goals defined by the GoG.

It is thought that this intervention, will contribute to the following achievements in the sectors in which, according to the intervention logic, the main initiatives are addressed (in this case forest and mining segments):

* Gold Mining. The continued growth of gold mining along the current trajectory of increased activity and areal coverage, reduced efficiency, and increasing impacts could result in great challenges to meeting Guyana’s commitments under the LCDS and Norway Agreement, and jeopardize realization of potentials for non-extractive uses.

According to experiences in exploitations in other locations, productivity in terms of area unit could be increased from the adaptation of more efficient clean technologies on this matter. The GoG, supported by the current PBP, has predicted funding for the studies enabling to structure the aforementioned adaptation, by verifying the consistency of economic feasibility of these initiatives in low and medium-scale mining operations.

Pessimistic scenario considering adoption levels in 25% of miners to be met 5 years after the adaptation and the net effects have been technically validated in terms of 12.5% increased productivity, the potential benefit estimated is in the amount of US$ 5.8 million per year. Optimistic scenario considering adoption levels in 50% of miners to be met 5 years after the adaptation and the net effects have been technically validated in terms of 25.0% increased productivity, the potential benefit estimated is in the amount of US$ 23.3 million per year[[1]](#footnote-2).

Eliminating use of mercury implies a reduction in terms of Environmental liabilities. According to current production level and operational condition, remediation cost of environmental impact would represent a cost of US$ 56.4 Millions.

* Forestry. Conceptually, the incorporation of Guyana into the international marketing systems that rely on legally sourced and environmentally sustainable timber is critical, since the future of the sector foresees, not just a price differential, but the disappearance of non-certified product buyers. The GoG strategy as regards origin certification and legality of wood will operate in the general protection framework defined by the agreement with the European Union, under FLEGT terms. Thereafter, the aim is to foster development of the different internationally valid certification systems.

According to references, it can be concluded that the market assigned value differential between certified and non-certified products is around 20% of the price. *Pessimistic Scenario.* It is estimated that through GoG intervention aimed at supporting the legal trade of forest products, at the current levels of activity, there could be additional income in the amount of US$ 4,3 million annually in the primary and added value production (considering 25% of the primary producers adopting this mechanism). Optimistic Scenario. In addition, this represents a significant move towards the expansion of the value chain, enhancing the opportunities for forest-based manufactures, where a potential of additional profits is detected in the amount of US$ 3.0 million per year (total expected benefit US$ 7,3 Million).

As a final reference, a Cost/Benefit relationship of 5.4 (Pessimistic Scenario) and 7.9 (Optimistic Scenario) may be established, taking into account the funds disbursed in both parts of the present PBP (US$ 34.1 Million) and the estimate of benefits provided by the present intervention (both values deducted at the Program's start date).[[2]](#footnote-3)

# Introduction.

### Program Framework and Progress.

* 1. *Background.* As part of the Low Carbon Development Strategy (LCDS), approved in 2009 and amended in 2013, the Government of Guyana (hereafter GoG) is emphasizing the importance of environmental protection for long-term sustainable development. This initiative has three fundamental components: (i) creating a low-carbon emissions economy, for which reforms are planned in the mining and forestry sectors; (ii) developing an economy that is resistant to the effects of climate change through investment in priority infrastructure; and (iii) procuring financing, where the bulk of resources come from a Memorandum of Understanding signed by the governments of Norway and Guyana (MoU), and are managed in the framework of the Guyana REDD+ Investment Fund.
  2. *Intervention progress.* Within this context, the Environment, Rural Development and Disaster Risk Management Division (RND) of the bank is making progress in preparing the second phase of a Policy-Based Loan (GY-L1043), Environment Sector Strengthening II, successor to the PBP approved in 2013. Both stages of the programmatic structure have the same objectives, which consist of promoting: (i) greater macroeconomic stability; (ii) an appropriate regulatory framework that supports the implementation of the LCDS and modernizes the management of sectors that rely on forest resources (principally mining and forestry); (iii) the institutional strengthening of the Government of Guyana's capacity to address environmental concerns; and (iv) efficient monitoring and the development of reporting and verification systems. The first payment (PBP First, GY-L1039, was disbursed in December of 2013) and the second payment (PBP Second) is in the design phase following the same conceptual guidelines.
  3. *Expected results.* Despite of the economic progress of the last decade, the GoG still faces a number of vulnerabilities including: (i) strengthening the efficiency and effectiveness of the public sector and (ii) reconciling its economic growth with the preservation of natural resources, which are its principal asset. With this in mind, the measures presented by the GoG and backed by the current Program, are designed to update and modernize its policy framework in order to achieve the following objectives:

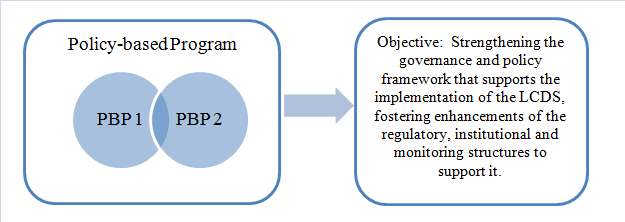
1. help stimulate growth of Guyana' s economy;
2. ensure that the commitments established in the MoU between the Government of Guyana and the Government of Norway are fulfilled.
3. guide the development strategy toward a low carbon emission strategy (LCDS), prioritizing investments for that purpose and encouraging sectors that use that production logic and;
4. expand the sustainable management of natural resources, adapting and modernizing the control, monitoring and reporting systems, with a special emphasis on the tracking of the forest and mining sectors.

# Evaluation assumptions and methodology

### Conceptual Framework.

* 1. The economic soundness of the anticipated investments and activities linked to policy commitments included in the Environment Sector Strengthening Program in Guyana requires justification. To that end, the methodology is supported by a general descriptive analysis of the economic reasoning behind it. This includes: (i) establishing the principal impacts expected at the general level of the economy; and (ii) adopting the cost-benefit approach to identify and explain the expected results in the sectors toward which the main initiatives are directed (in this case the forestry and mining sectors), based on evidence and/or estimates supported by technical research.
  2. The following diagram shows the basic structure of the Policy-Based Program, consisting of two successive loans. Its components and conditions[[3]](#footnote-4) work together with graduated objectives and goals[[4]](#footnote-5). Its common objective is to strengthen the regulatory framework in Guyana in order to support the implementation of the LCDS and modernize the management of sectors that rely on forest resources (principally mining and forestry). At the same time, the intervention seeks to help consolidate the capacity of GoG institutions to confront environmental challenges, including the tools of monitoring, reporting, and verification systems. The following figure shows the coordination of both transactions as a graphic.

Figure 1. Basic structure and Objective of the PBP.

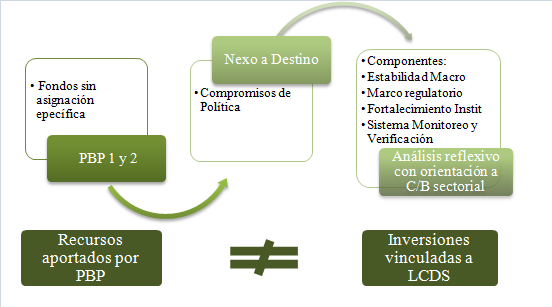


* 1. Both phases were designed with an identical structure with four components: (1) Macroeconomic stability, (2) Regulatory framework, (3) Institutional Strengthening and (4) Monitoring, Reporting, and Verification System (MRVS).

### Programmatic Policy-Based (PBP) Loan Evaluation Criteria.

* 1. The LCDS has two congruent elements: (i) a policy whose aim is to strengthen its capacity to provide environmental services, while recognizing structural restrictions to be overcome (education, integration of Amerindian communities, energy matrix), (ii) a set of actions oriented toward development, whose concept is based on the central guidelines and whose implementation is adapted to the social, economic, and political context.
  2. The PBP intervention focuses principally on those sectors that are reliant on or have an impact on the forests, which are a critical part of the strategy. This document presents the expected benefits in terms of competitiveness in those sectors. It is estimated that these effects will manifest themselves through improvements in the general conditions of competitiveness and environmental sustainability in the country (as a result of macroeconomic stability and greater financial ability to tackle investments in infrastructure), as well as increased productivity of the economic agents involved in the mining and forestry sectors, where the PBP is focusing its efforts (best practices, laws and regulations of extractive industries, access to forest product certification, adoption of clean technologies in the mining sector). Additionally, advances in climate change adaptation strategies help reduce the risk of extreme events.
  3. Because this is a PBP, there is no explicit connection between the loan disbursements and the implementation of anticipated actions[[5]](#footnote-6). This makes it difficult to accurately define the connection and causality between the resources and the anticipated results, and there are two different theoretical approaches. One maintains that the PBP provides a financial incentive that persuades reluctant governments to implements reforms that they would not have otherwise undertaken for internal policy reasons. The second asserts that these payments help interested governments implement reforms to which they are committed, but for which they lack sufficient resources. This last argument, defined as *empowerment*, and generally the most accepted, operates under the premise that distortions caused by some policies could prevent countries from maximizing their growth rate. Therefore, the elimination or mitigation of these restrictions would theoretically produce future benefits in the form of increases in the efficiency of resource allocation[[6]](#footnote-7). Completing the analysis, it is recognized that the causal effect of a PBP presents complications in terms of attributing expected impacts, given the regular participation of other stakeholders in the initiative and its limited ability to effectively modify the policy preferences on its own. The following diagram reflects this:

*Figure 2. Diagram of PBP outflows and results.*

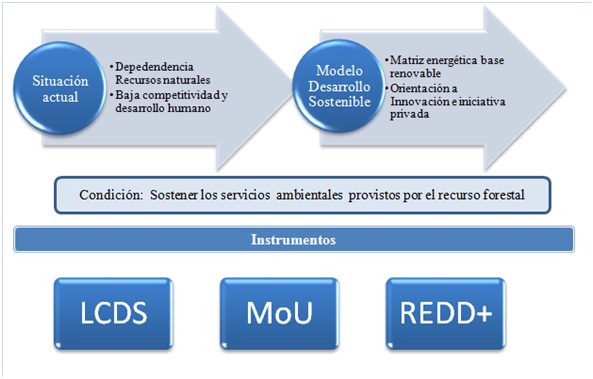


* 1. While the global resources (agreement with Norway, public budget and/or additional sources under the REDD+ mechanism) for the implementation of investments aimed at sustainable management will exceed those provided by the PBP, its conceptual link is based on aims defined by the LCDS. Thus investments specific to the PBP are a necessary condition for the general development outline set forth by the GoG to function.

### Strategic relationship of the Programmatic Loan

* 1. Following the IDB's methodological recommendations[[7]](#footnote-8), the economic logic of the intervention is established, placing the present Economic Evaluation of PBP 2 in the framework of the programmatic series, as well as its context and ties to other instruments with common objectives.
  2. Guyana's economy has a production profile based on the exploitation of natural resources, and has low human development[[8]](#footnote-9) and competitiveness,[[9]](#footnote-10) but at the same time has great environmental strength. After restructuring its sovereign debt in 2006, its access to capital markets increased. However, the magnitude of the investments needed for economic development requires extraordinary resources, in addition to a regular flow of funds. In that context, the GoG perceived in the middle of the last decade that conditions created in global forums on the effects of climate change (CC), greenhouse gas emissions[[10]](#footnote-11)among them, created an opportunity to procure financing for an economic restructuring.[[11]](#footnote-12) In this framework, the central idea rested on two aspects: (i) making gradual progress in investments that stimulate development, redirecting land use toward activities with greater productivity (thereby increasing economic value to the nation - EVN) and (ii) maintaining forest resources in a way that does not harm the environmental services that Guyana currently provides to the world (maintain stable economic value to the world - EVW). The challenge in question is bringing together both strategies, as illustrated in the following chart.

*Figure 3. Development model – Direction, conditions, and tools.*



* 1. Faced with this situation, the GoG has made progress in the design and use of a mix of instruments, which function in a coordinated and integrated way and share basic premises of the process, in order to: (i) maintain Guyana's strength as a provider of environmental services to the World, (ii) restructure and modernize the economic development model and (iii) procure financial support from interested counterparts. The instruments cited are:

1. The LCDS supports investments that generate economic growth, while simultaneously helping to maintain control of the forested area (deforestation and degradation) and promoting the reduction of greenhouse gases. The most relevant economic measures include:

• Investing in infrastructure with low carbon emissions, with a focus on hydroelectric generation; facilitating access to non-forested arable land and improvement of fiber optic provision.

• Promoting private investment in high potential, low carbon emission sectors (fruits and vegetables, aquaculture, eco-tourism and outsourcing).

• Reforming forest-dependent sectors (mainly mining and afforestation) so that they operate under strict sustainability models.

• Improving the range of services and opportunities for all citizens of Guyana, including encouraging private activity, entrepreneurship and the expansion of basic social services, health and education among them.

• Reducing vulnerability to the effects of climate change.

1. the MoU establishes commitments concerning deforestation, forest degradation, and carbon emissions and absorption, determining the financial conditions of the payments to be received from Norway. Investments in infrastructure and other initiatives linked to the stimulation of innovation and private activity are accompanied by policies and regulations in sectors with high forest impact, compliance with which is a condition for maintaining the agreement (or avoiding a decrease in the financial flow to Guyana)[[12]](#footnote-13).
2. The resources for the strategy are supported institutionally through REDD+, the third instrument. The funds provided through the agreement with Norway are then channeled through this mechanism[[13]](#footnote-14), through which the following are financed: (i) part of the investment needed to implement the LCDS and (ii) the institutional strengthening of areas of the GoG for the appropriate management of REDD+[[14]](#footnote-15). The model allows for additional sources of financing (IDB, World Bank, and UNDP, among others)[[15]](#footnote-16).
   1. As a result, the resources that finance the restructuring of the development model are created according to the guidelines and conditions of the LCDS. For the purposes of maintaining the conditions of the MoU and its associated instruments in force, a group of sustainable strengthening actions is urgently needed, under which the current PBP is structured. This way, the fulfillment of the Policy Commitments will allow the strategy progress to be consolidated, a necessary requirement to achieve the expected benefits for the country.

### A look at the components.

* 1. *PBP Components.* The general approach provides a basis for the initiative, while the different components provide their particular contribution.
* Component 1. Macroeconomic stability. This stability contributes to a general investment framework through the predictability provided to economic stakeholders. It also tends to facilitate the procurement of additional sources of financing for these purposes.
* Component 2. Regulatory Framework. The strengthening of legal and regulatory support is a necessary condition to expand the stated objectives. This helps stakeholders in the sectors adapt their practices to more appropriate and efficient environmental standards.
* Component 3. Institutional Strengthening. This aspect is complementary to the one above. The implementation of superior regulatory frameworks demands reinforcement of the capabilities of state agents that drive and monitor the stated objectives.
* Component 4. Monitoring, reporting and verification system. The complexity of tracking the technical aspects involved in the MoU commitments[[16]](#footnote-17), requires specialized studies. Regarding GFC (Guyana Forestry Commission) capacity, scientific knowledge needs to be developed that allows for the evaluation of deforestation and degradation levels (identifying the causes of these conditions in order to reverse the deterioration processes). This condition is so that strategy planning and monitoring will be consistent with the established objectives of the LCDS.
  1. As explained previously, the Program components linked to the mining and forestry sectors (fundamentally Institutional Regulatory and Reinforcement Framework) are the most relevant, taking into account their marked influence on the sustainability of natural resources, a critical focus of the outlined framework. Therefore, the approach includes a cost-benefit analysis from the perspective of the forestry and mining sectors, where aspects related to clean technology and forest management regulations will be evaluated[[17]](#footnote-18). In mining, a plan exists to incorporate clean technologies for reducing pollution (mercury management in gold mines), promoting associative practices and, supplying new technology that allows for increased extraction per hectare, creating conditions for progress in economies of scale in other phases of the activity (productive as well as commercial). The forestry sector is projecting income increases in the sector based on regulatory models (certifications, tracking), that allow access to more attractive export markets, incentivizing an increase in value-added production.
  2. It is essential to reflect on how the resources supplied by this PBP may contribute to the GoG's general strategy. These will undoubtedly be substantial for the purposes of covering the stated requirements for fulfilling the commitments in the MoU. It is also perceived that long-term changes to the production profile will be the result of several elements, among them specific investments through REDD+ as well as those to the private sector that subscribe to the LCDS objectives. From here it can be concluded that the present PBP is not sufficient on its own, but that it is a necessary requirement to achieve the stated aims, being confirmed as an effective contribution to the expected impacts.

### General premises of the analysis.

*Additionality - Applied concept*: The estimate of the benefits created for Guyana's economy and forest-based exploitation sectors comes from comparing the following two scenarios: (a) that which comes from the interventions linked to the political commitments agreed upon in the PBP (defined as the with-project scenario), which consequently coincides with the possibility of the GoG sustaining the MoU commitments and moving forward with the LDS, creating better competitive conditions in the defined sectors; and (b) the economic situation in light of the inability to expand the LCDS advancements, which will be estimated based on historical data and identified trends (defined as the without-project scenario).

*Figure 4. Incremental approach of PBP*



### Relationship between identified benefits and evaluation indicators.

To that end, the development of the identification of benefits supported by this economic evaluation makes reference to those indicators that are part of the Results Matrix. The indicators in the Matrix are listed in Annex V. Results Framework Matrix of Indicators.

# Program Evaluation

## Component 1. Macroeconomic Stability

### Economic Profile – Main figures.

* 1. Introduction. The majority of the institutional structure linked to the LCDS objectives are the responsibility of the Ministry of Natural Resources and the Environment[[18]](#footnote-19). However, one of the basic elements that the Matrix of political commitments is based on is macroeconomic aspects. In this way, other institutional stakeholders (principally the Ministry of Finance and Economy) use their policies to help establish the global conditions in which the economy develops, creating what normally would be defined as a favorable climate for investments. In order to understand the framework of this commitment, we think it is necessary to include a brief overview of Guyana's economy.

Component 1 Commitment. *The GoG is committed to maintaining an economic framework in accordance with the LCDS policy*. In terms of expected effects, given that based on the progress observed from 2005 to the present, stability has been achieved, the required commitment is to maintain this stability.

* 1. *Macroeconomic framework*. After restructuring its debt in 2005, the country entered a phase of growth only limited in size during the international financial crisis. As will be explained later, the current context presents satisfactory trends in the relevant variables. The following table shows the main indicators of the Guyanese economy.

*Table 1 - Principal Economic Indicators in Guyana*



*Source: Bureau of Statistics of Guyana Historical Information (*www.statisticsguyana.gov.gy) *and Bank of Guyana (*[*www.bankofguyana.org.gy*](http://www.bankofguyana.org.gy/)*). Projections based on IMF Reports[[19]](#footnote-20). Monetary baseline according to ECLAC Economic Survey 2014.*

* 1. The table can be explained according to the description of the indicators, grouped thematically:

1. Real Sector. The first group of indicators refers to the real economy, where the 2006-2013 period shows an average annual growth rate of 4.6%, which within a framework of stability has allowed significant improvement of the indicator per capita (between 2006 and 2013 the GDP per capita increased 132% measured in US$). In 2013, growth was 5.2%[[20]](#footnote-21) and the economy is expected to continue growing vigorously in 2014 (4.3% prediction IMF – 4.5% prediction GoG).
2. Monetary Indicators. Inflation has been in the 3% to 7% range during the last 5 years, with a value of 0.9% in 2013. The forecasts for the expected 2014 rate vary within a small range, delimited by the estimates from the Bank of Guyana (3.0%, due to expected increases in food and fuel) and the IMF (5.0%). Other sources agree that inflation will continue to be moderate in 2014, although it will exceed 2013 rates as a result of anticipated upward pressures on fuel and food prices[[21]](#footnote-22). In this context, the exchange rate (Guyana Dollar/US Dollar parity) has been stable with minimal variations[[22]](#footnote-23).
3. External Sector. The balance of payments deficit remains within the 11-16% range, and was 14.2% of GDP in 2013. Similarly, reserves are at a level in keeping with the evolution of the economy, reaching 23.6% of GDP at the end of 2013[[23]](#footnote-24).
4. Fiscal situation. Management consolidation in this area is reflected in the decrease of the fiscal deficit, which dropped from 11.6% of GDP in 2006 to 4.3% of GDP in 2013. Pressures on spending come principally from state-owned enterprises (sugar and electricity), the external petroleum supply, and salaries of state sector employees[[24]](#footnote-25).
   1. *Review of macroeconomic risks.* The analysis of the following elements allows for a general reflection:
5. Public Debt/GDP Ratio: Given that the indicator has reached satisfactory levels (57.7% of GDP), the future management of the debt shows a moderate risk. According to GoG data, it is estimated that the projected capital investment plan of the public sector, financed with external resources, will rise to US$ 100-120 million per year until 2016.
6. Production matrix: It is a country with intensive energy use, supplied mainly by external sources. Although diversification measures are expanding production options, the economy continues to be concentrated on a few basic products (natural resources). As a result, changes in the sector can have considerable macroeconomic effects. The slow speed of the economic diversification process could create misalignments in terms of sustainability, since it would have an effect on growth and the fiscal situation.
7. Current account/external sector. One factor causing undesirable effects is fuel importation, which is projected to decrease through a modification of the energy matrix, providing greater hydroelectric capacity.
8. Fiscal balance: Two factors have limited the consolidation of the fiscal balance: (i) persistent losses by GPL, [[25]](#footnote-26)attributable to the rise in oil prices and/or continued levels of technical and commercial losses, and (ii) infrastructure investment projects needed for development.
9. Exposure to natural disasters: The territory is exposed to weather-related and natural threats (floods) that tend to have a significant impact. While Guyana has a relatively low incidence probability (40% compared to 90% for many countries in Central America and the Caribbean), effects on the economy have been significant (damages/GDP ratio of 37.4% as opposed to approximately 1% for other countries).
10. Political Risk: After the 2011 elections, the new government assumed power in December of that year without a majority of seats in the National Assembly. This could delay the public investment program and the timely execution of the main projects promoted by the authorities.
11. Relationship with the global financial markets: Given their small scope, the limited ties act as a brake that protects Guyana's financial sector from a potential international crisis.
    1. *Comparison with Latin America and the Caribbean economies.* Regional indicators[[26]](#footnote-27) can be taken from a recent ECLAC study.

*Figure 5 – 2012 and 2013 REAL GDP growth rate. 2014 ESTIMATE*

*Source: ECLAC Economic Survey 2012 and 2013.*

* 1. The results of the annual GDP performance confirm the high degree of heterogeneity between countries. In general, a decreased acceleration in the dynamism of internal demand and its contribution to regional growth is evident. The performance of Panama's mining industry substantially supported its remarkable progress as the benchmark of regional growth (8.4%). Guyana is at a satisfactory level within the group (the average in Latin America and the Caribbean was 2.5%) both historically and in projections (5.2% in 2013 and 4.3% projected for 2014).

*Figure 6 – Inflation in Guyana vs LAC Regional Average - 2011-2012 and 2013 data*



*Source: ECLAC Economic Survey 2013.*

* 1. Looking at the weighted average, the regional inflation rate in 2013 was 7.3%, while in 2011 it was 5.6%[[27]](#footnote-28). The highest levels were in Venezuela, and the lowest in Trinidad and Tobago and Jamaica. While underlying inflation trended upward in most countries throughout the year (rise in food prices), Guyana's position stands out, both in terms of the trend as well as the indicator's absolute value.

*Figure 7 – Fiscal result and debt/GDP ratio in the Caribbean economies - 2012 data.*



*Source: ECLAC Economic Survey 2013.*

* 1. In the Caribbean countries, there was an average deficit reduction of 0.2 percentage points of GDP, with a total result of 3.0 GDP percentage points. In terms of gross public debt, the landscape is varied, averaging more than 76% of GDP in 2013, with a low of 40% in Suriname and a high of more than 120% in Jamaica. Regarding Guyana, it should be noted that although the fiscal situation has its weaknesses, its debt to GDP ratio (equal to 57.7%) is at a manageable level.

### Benefits of stability on the economy / Financial Support

* 1. Economic stabilization can be summarized by the presence of the following elements: (i) low inflation (ii) sustained growth and (iii) orientation of investments towards the optimization in the use of the production resources with a long-term focus. The main reason why countries incorporate the objective of stabilizing prices at reduced inflation levels has to do with its contribution to the creation of a climate conducive to economic growth. The opposite situation (high inflation rate and strong volatility in the concerned sector) acts as a strong deterrent to private investment.
  2. Uncertainty not only affects the potential entrepreneur, but also limits, conditions and/or increases the cost of access to credit. On the other hand, economic stability creates a situation that cultivates a virtuous circle: more savings, greater investment, and therefore, growth. This allows different economic stakeholders to take productive risks, feed economic activity, and the subsequent secondary effects, thereby providing new employment opportunities with higher incomes for families, generating foreign currency, meeting their tax obligations and all other related activities. As a result, the conditions for access to supplier markets improve, which is equivalent to reducing the fiscal cost of public indebtedness. Additionally, the strengthening of the macroeconomic conditions can mitigate the impacts of possible economic and financial crises, whether they are internal or external in nature.
  3. As mentioned, Guyana shows a relatively large budget deficit and a relatively high level of public indebtedness. In addition, GoG faces the challenge of maintaining a minimum level of public capital investment to promote growth while simultaneously limiting the risk of debt distress. As a consequence, regarding spending constraint under current conditions, the resources of the PBP provide some relief on those aspects.

## Component 2. Regulatory Framework

### Global challenges.

* 1. The LCDS is still an important point of reference linked to the control of deforestation levels since this is a critical part of maintaining resource availability for advancing the restructuring of production. As a result, one of the management objectives is reconciling the growth patterns of different sectors and making the necessary investments for development, without damaging the environmental strength of their surroundings. The evolution and characteristics of the deforestation rate puts the economic sectors where the intervention is focused in context.
  2. Long-term trends. Over the last decade, Guyana's forests have been under pressure due to the intensification of economic activity, as well as Climate Change. From 1990-2010, the deforestation rate was between 0.01% and 0.06% on average, relatively low compared to most tropical countries. The following graphic allows for analysis of the general trend of the deforestation process, as well as the relative significance of the principal drivers:

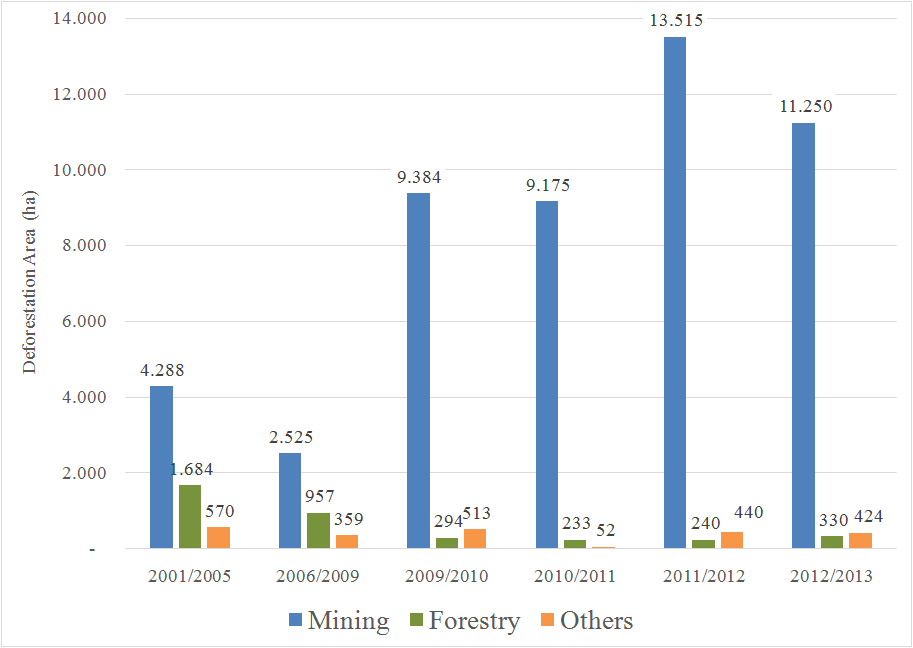
*Table 2 – Trend and Drivers of deforestation 2001-2013*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Driver | Historical 2001/2005 | Historical 2006/2009 | Year 1 2009/2010 | Year 2 2010/2011 | Year 3 2011/2012 | Year 4 2012/2013 |
|
| Mining | 21.438 | 12.624 | 9.384 | 9.175 | 13.516 | 11.250 |
| Forestry | 8.420 | 4.784 | 294 | 233 | 240 | 330 |
| Agriculture | 2.852 | 1.797 | 513 | 52 | 440 | 424 |
| Infrastructure | 1.304 | 195 | 64 | 148 | 127 | 278 |
| Fire | 235 | - | 32 | 58 | 184 | 96 |
| Other |  |  |  | 225 | 148 | 324 |
| Area Change | 34.249 | 19.400 | 10.287 | 9.891 | 14.655 | 12.702 |
| Total Forest Area | 18.452.127 | 18.417.878 | 18.398.478 | 18.388.191 | 18.502.531 | 18.487.876 |
| *Period deforestation* | *0,037%* | *0,021%* | *0,056%* | *0,054%* | *0,079%* | *0,069%* |

Source: GFC and Indufor reports.

* 1. Recent measurements. In the last evaluation[[28]](#footnote-29) deforestation was estimated at 12.702 hectares in the period from January 1 to December 31 of 2013. This represents an annual deforestation rate of 0.069%, slightly less than the previous year (0.079%). The principal justification for this reduction is the reduced impact of mining activities, whose affected area shrank by 2,177 hectares.
  2. It is also important to note that this economic growth in Guyana and in particular in the mining sector has been fueled substantively by the high price of gold. Due to the conditions under which this extractive industry operates, there are direct losses in terms of deforestation and degradation of the ecosystem, creating persistent impacts on nature's capacity to provide essential services. In this way, the mining sector's impact over the last 3 years represents on average 91% of total forest loss. The loss attributable to logging fell substantially, making agriculture the second-leading cause of deforestation, with 2% of the total. The relevance of the different sectors is reflected in the following graph.

*Figure 8 – Area deforested annually 2001-2013*



Source: Prepared by the authors with GFC data.

* 1. The importance of this data, in light of the fact that it is critical as a reference of its development focuses, leads to some reflections:

1. Given that this is a nation-wide system, from a technical level it is acceptable to see variations in the deforestation rate from year to year, given the regular changes in land use. It is important to note that the range of variation in recent periods has been small compared to other countries[[29]](#footnote-30).
2. Although at first glance there is significant relative variation in terms of percentages, the final values have regularly fallen within the limits established in the MoU with Norway[[30]](#footnote-31). The MoU sets a maximum deforestation level of 0.100%, a level above which Guyana is not entitled to receive funds.
3. The size of the changes observed is insignificant in absolute terms. Over the last two years, GFC has made progress implementing new sources of data and monitoring mechanisms (moving from a 30 meter satellite imagery data source Landsat to a 5 meter data source Rapid Eye).  These changes, which will strengthen tracking capacity in the long term, may have had an impact on the figures reported.
   1. A significant fact influencing this decline in deforestation in mining has also been the intensified monitoring activities by the natural resources sector and its agencies in working with operators in the sector. According to GOG, the mentioned decrease in 2013 may be on account of more responsible and low-impact mining practices.
   2. Regarding the rate of degradation. Guyana has begun to evaluate this indicator with a focus on the principal drivers. Results from the past 3 years, during which mining has been the principal driver, are shown in the following table.

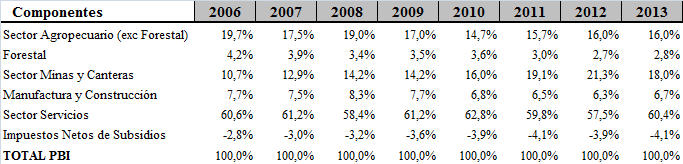
Table 3 – Trend and Drivers of degradation 2011-2013

|  |  |  |  |
| --- | --- | --- | --- |
| Driver | Year 2 2010/2011 | Year 3 2011/2012 | Year 4 2012/2013 |
|
| Mining | 4.230 | 1.629 | 2.955 |
| Forestry | 118 | 113 | 85 |
| Agriculture | - | - | - |
| Infrastructure | 4 | 13 | 112 |
| Fire | 22 | 208 | 396 |
| Shifting agriculture | - | - | 765 |
| Other |  |  | 40 |
| Area Change | 4.374 | 1.963 | 4.353 |

Source: GFC and Indufor 2012 Final report and 2013 Interim report.

* 1. *Economic characterization.* To put sectors that are expected to be affected by the planned actions in a national perspective, the GDP distribution trend is presented here.

*Table 4. GDP Structure in Guyana 2006-2013.*



*Source: Bureau of statistics.*

* 1. The indicators from after the debt restructuring (2006) put the services sector in the most relevant role (between 57.5% and 62.8% of the total at current rates between 2006 and 2013). The main sectors of interest to the PBP behave differently: (a) the forestry sector has declined, going from 4.2% to 2.8% of the total, (b) mining expanded (it has grown from 10.7% to 18.0% of the total) due to a push from high commodity prices, incentivizing domestic investment like the FDI[[31]](#footnote-32).
  2. The GoG has made strides in correcting some of the institutional and normative weaknesses with regard to natural resources and environmental governance, for example, through the creation of the new Ministry of Natural Resources and Environment. However, there are still serious weaknesses with regard to the governance regime, especially with effective management and regulation of land use (notably in the mining and forestry sectors), as well as in the regulatory policies and measures concerning administration of forest resources, fishing, and protected zones. Other challenges are the lack of technical skill, inadequate coordination between organizations, the high cost of traveling to interior zones to manage natural resources, lack of economies of scale, infrastructure limitations, and the lack of integration of environmental topics in education and national policies.
  3. The PBP seeks to further the goal that mining and other extractive industries operate under international environmental standards. In the LCDS framework, the GoG commits its efforts to gradually improve practices so that they align with high-level requirements. In order to minimize all types of environmental degradation or pollution, [[32]](#footnote-33)they are working to strengthen the regulatory framework. These two sectors (mining and forestry) are the focal point of the PBP's intervention, taking into account the impact of their operating conditions on the environmental offerings capacity of the forest resource where they are based.

### Main challenges in mining.

* 1. *Mining Industry.* Accounting for 18.0% of national GDP[[33]](#footnote-34), the mining industry is the main export sector (57.0% of all goods exported in 2013), having undergone a process of expansion driven by the high prices of its products in the last decade[[34]](#footnote-35). While it is somewhat diversified, gold mining has become the driving force (outgoing shipments of gold alone totaled US$ 648 million in 2013)[[35]](#footnote-36).
  2. The dominant type of exploitation is small and medium-scale artisanal mining, which makes up 75% of the total. In 2012, the sector employed 17,000 people, rising to more than 20,000 when indirect jobs are included[[36]](#footnote-37). It is estimated that in the next few years these numbers will continue to grow, after the launch of larger projects with investments in the amount of US$ 1 billion altogether[[37]](#footnote-38).
  3. Its principal weaknesses are the following: (a) the impact of extraction activities on deforestation levels and degradation of forest resources and (b) pollution due to the use of inappropriate techniques (mercury use in gold mining being the most significant).
  4. *Deforestation process.* The removal of forest resources in order to use the area for extraction is one of the principal negative impacts*.* The direction of the anticipated actions of the PBP is to support the incorporation of technologies to optimize production levels in terms of land use. The challenge is to help adapt existing clean technologies (tested in other geographic areas) to the characteristics of the ASM present in Guyana, achieving economies of scale through collective investments. Improvements in productivity may allow for an increase in sector income without further affecting the forest resources. The set of rules and regulations represents the systems of incentives for the mining sector to begin this phase of adaptation.
  5. *Mercury contamination.* Among gold miners in Guyana, amalgamation continues to be the preferred method of separation of gold from concentrates. Miners have found no other method that compares favorably with mercury in terms of cost-effectiveness and ease of use[[38]](#footnote-39).
  6. GOG signed Minamata Convention in October 2013 and ratified the agreement in September 2014[[39]](#footnote-40). The convention establishes measures for artisanal and small-scale gold mining and processing in which mercury amalgamation is used to extract gold from ore. Parties in whose territory those activities are carried out shall taken steps to reduce and, where feasible eliminate, the use of mercury.
  7. With the gold mining industry projected to continue growing, the Government has endeavored to ensure that mining operations promote higher standards of environmental sustainability. In becoming a signatory to the Minamata Convention, Guyana would exercise a phasing in of restrictions against the use of mercury in mining. On that line, GOG shall develop a National Action Plan, including a diagnosis of the country’s technical and analytical capacities Acceptance of new technology to face this issue is facilitated by the fact that most of the mining population is educated. Costs then would be the main deterrence. Accordingly, the government is on record expressing its willingness to exempt from duties equipment or material that will promote more environmentally-friendly mining[[40]](#footnote-41).

### Main challenges in forestry.

* 1. *Forestry Sector.* Currently amounting to 2.8% of national GDP, the sector's relevance as a contribution in the fight against climate change is the nation's principal strength[[41]](#footnote-42). The sector has a significant impact on the level of employment in rural zones and the country's interior, employing approximately 20,000 people, 10% of the total labor force[[42]](#footnote-43). A 2009 study estimated that the majority, 18,500 people, were small-scale loggers)[[43]](#footnote-44).
  2. The exploitation of Guyana's forests is carried out by granting operation concessions to private companies and individuals, with 29 large concessions and 419 small concession having been granted at the end of 2012. Extractive companies must maintain a detailed reporting system that includes: (a) inventory reports of precut or cut trees, (b) annual extraction plan, and (c) compliance with tracking registry measures. The extraction volume per exploited area has been reduced, reaching 8-10 m3/ha[[44]](#footnote-45), showing a potential improvement. In the period from 2011-2013, sector exports reached an annual average of US$ 39 million, with logs as the principal product, representing 74% of shipments[[45]](#footnote-46) (principal destinations India and China). There is also a small but growing local market for finished products for the construction and home sectors.
  3. Throughout Latin America, natural forests are largely managed through private long-terms concessions applied over relatively small areas (this is the modality in Guyana and also used in Bolivia and Suriname). The exploitation of the natural forest is still largely oriented toward timber production. In the case of non-timber forest products (NTFP), the majority of these are locally used, though sometimes they are sold as raw material for the preparation of various products such as cosmetics and pharmaceuticals.
  4. The following are some of the challenges of sustainably managing the region's natural forests used for timber production (FAO 2009): (i) limited adoption of low-impact timber extraction due to insufficient incentives; (ii) limited certified forest area due to elevated costs and the absence of subsidized prices, and especially due to the availability of illegally-obtained timber; (iii) prevalence of the informal sector. Verification of legality, forest management certification and Chain of Custody certification are differentiating elements that increase competitiveness in international markets and tend to become trade conditions. Often, the verification of timber products is subject to the protection of freshwater systems or waterways[[46]](#footnote-47).

Challenges of certification systems[[47]](#footnote-48).

Additional challenges facing the entire timber sector include:

o Market fragmentation. Even when there are communities interested in producing timber in a sustainable manner, and buyers in the market that would pay for this timber, there is no clear link between the two parties, so the differentiation may be lost.

o Loss of the certification seal along the productive chain. If the certified timber is mixed with other types of timber in the sawmills, the monetary benefit for the producers and sellers of sustainable timber is completely lost.

o Demand of scale. International demand for certified timber is increasing, requiring minimum volumes in order to undergo the certification process.

These are results from a 2006 survey covering 50% of Mexican sawmills:

* Products manufactured by certified wood sawmills typically pass through several hands before reaching the final consumer.
* After leaving the sawmill, between 25% and 35% of the timber retains its certification; the rest is mixed with non-certified wood.
* It is possible to get a premium on the price of certified timber. This requires certified sawmills to expand their activities to lower levels on the production chain. Unfortunately, they lack the skills and scale to do so.
* There are significant market prospects for exporting this timber.
* It is more feasible that the premium on the price could be obtained in countries where "green consumers" are plentiful and there are public policies supporting environmental causes.
  1. The GoG strategy for the forest sector is focused on maintaining levels of operation under control, increasing quality in its productive orientation, based on: (i) making the extraction processes more efficient and (ii) incorporating added value, integrating primary production in timber processing (or in non-timber forest products[[48]](#footnote-49)). The global market is demanding products that fit this profile, a process that will require investments from the private sector, as well as appropriate regulatory mechanisms for a demanding international context in terms of traceability of origin of the acquired goods.
  2. Since the launch of the LCDS in 2009, the GoG has prioritized the goal of supporting this sector's growth in accordance with international standards, including the measures necessary for implementing the framework of the bilateral agreement with the European Union under the FLEGT initiative[[49]](#footnote-50) [[50]](#footnote-51).

FLEGT[[51]](#footnote-52)

An initiative of the EU established in 2003 whose objective is to improve governance and reduce illegal logging through sustainable forest management as well as promote timber trade under these conditions. The measures it promotes include:

• Encouraging the private sector in the EU to adopt purchasing policies that ensure only legal timber in their supply chains.

• That the EU member states adopt public purchasing policies that require verification in their supply contracts that the timber is legally produced.

• Exclusion of illegal timber in the EU market.

Among the measures aimed at capacity-building in developing countries so that they produce legal and sustainable timber are:

• Technical and financial support from the EU to improve governance and capacity-building in governmental and non-governmental stakeholders.

•Support for governments of producing countries through bilateral trade agreements called Voluntary Partnership Agreements (VPA).

The VPAs incorporate commitments and actions by both parties to stop the illegal timber business, primarily through the implementation of a timber licensing system for exports to the EU, whose principal positive impacts are:

* Improved application of forest and environmental laws.
* Development of certified product markets.
* Incorporation of measures that support the reduction of corruption.
* Development and use of more effective monitoring systems;
* Contribution to transparency and political responsibility.
  1. Forest sector has been operating at a conversion efficiency of 40% on average. Some of the factors that impact on this situation are the old machinery and equipment being used, lack of maintenance, lack of training and inefficient layout. Many analysts have identified this to be one of the main inhibitors for low adding value in Guyana’s forest sector[[52]](#footnote-53).
  2. *Land use*. The establishment of land use planning systems that better integrate the use of resources between the mining, agricultural and livestock, and forest sectors, and protected areas must be supported. In most countries, overlaps between concessions, rights, mining permits, protected areas, logging concessions and indigenous reservations are common, since the surface and subsurface rights are treated as distinct entities in the provisions of the majority of farming laws.

### Program Objectives

* 1. The principal needs in the mining and forestry sectors have been established. Based on this, specific problems associated with the operations of specific institutions in these sectors have been identified, in order to help strengthen them by implementing anticipated reforms in accordance with the defined policies. The GoG recognizes the importance of managing this aspect in line with the goals of the LCDS; therefore they are making progress in strengthening the following aspects of the regulatory framework.

Component 2 Commitments.

The GoG is committed to diverse actions to restructure the conditions under which the two most relevant sectors in terms of forest impact operate:

For the mining sector, to ensure that operations are adapted to the highest appropriate standards, including: (i) expanding the revision of the legal and regulatory framework and (ii) ratification of the Minamata Convention,

For the forestry sector, the objectives are the following: (i) establishing a Code of Practices for the logging or cutting of wood (agreed upon by industry leaders) applied in 100% of concession areas; (ii) making progress in negotiations with the European Union in order to reach an agreement to apply EU-FLEGT standards.

*Summary of PBL 1 commitments: Mining:(i) revise the legal and regulatory framework of the extractive sector; (ii) initiate EITI implementation; and (iii) study incentive proposals for the use of clean technologies. For the forest sector: (i) establish a code of practice for the logging/cutting of wood agreed upon with the industry; (ii) present a definition of legality under the EU-FLEGT initiative. Additionally, reconciliation between both sectors is attained through the land use strategy (GLSC National Land Use Plan).*

### Concept and estimation of expected benefits.

* 1. Gold Mining. The expected benefits contributed by the PBP actions consist of increasing productivity in gold exploitation and eliminating mercury contamination.
  2. Increasing productivity. In the case of small and medium-scale gold mining production increased as a result of high gold prices. However, technologies currently used by ASM are not efficient in terms of area unit affected (recovery levels of gold contained in raw material is below 40%)[[53]](#footnote-54). If this trend continues, business-as-usual growth in mining will most certainly result in increased deforestation from the sector, utilizing a greater portion of the acceptable budget, in term of REDD+ conditions.
  3. Pursuant to the GoG estimates, current production levels of ASM could be met through a lower impact in deforesting levels, if other updated productive processes were applied. The various factors that are involved in increasing the efficiency of sluice boxes are not generally known to miners. Improving mineral recovery of operations and hence their economic viability, however, constitute a major opportunity to get miners to accept and afford the additional costs that will accompany the requirements for higher environmental standards[[54]](#footnote-55).
  4. Thus, the higher expected productivity, reflected by the ability of operating within a greater efficiency range, will result in an increase in net income for the miners, which will in turn create a wealth effect on the economy. Likewise, GGMC itself needs to improve planning and direction of the production management (GGMC acknowledges the need for strengthening its technical human resources in order to perfect geological and geotechnical studies to determine the strategy for land use).
  5. The following table summarizes the main gold mining productive and commercial indicators in Guyana during the last 3 years. Highlights: (a) production grows at a level higher than 16% per year, (b) exports absorb the entire production, showing high economic values due to the commodity high prices (in spite of the reduction at the end of the period).

Table 5. Gold Mining - Main Figures.

Fuente: Bureau of statistics and Bank Of Guyana.

According to experiences assessed by the GGMC[[55]](#footnote-56), productivity in terms of area unit could be increased fron the current level of 40% up to a maximum level 55-60%, from the adaptation of clean technologies currently applied in operations of different dimension and location. The GoG, supported by the current PBP, has predicted funding for the studies enabling to structure the aforementioned adaptation, by verifying the consistence of economic feasibility of these initiatives in low and medium-scale mining operations, as well as by providing technical support (and eventually financial from other sources) to facilitate technology adoption by the miners. The process will be channeled through pilot actions enabling the adequate learning and adjustment of progress.

* 1. As mentioned, GoG depends heavily on mining and in particular gold revenue and in a situation of falling gold declarations the temptation is to open more lands to gold mining. Business-as-usual growth in mining will most certainly result in increased deforestation from the sector, utilizing a greater portion of the deforestation budget. One of the main challenges is effective coordination of both aspects, If this is not achieved, the effects of the well-designed rules and regulations would become irrelevant.
  2. In order to prepare the valorization described below, average gold prices during 2006-2010 period were considered[[56]](#footnote-57). The estimate of expected benefits to which this program contributes was made on the assumptions below: (a) the potential beneficiaries will have a productive incentive for incorporating clean technologies, since these will enable to meet higher production levels in their exploitations, and in turn obtain higher individual incomes, (b) therefore, a high adoption level is expected, in a range between 25% and 50% of the population, a target to be completed 5 years after the adaptation has been technically validated, (c) the net effects on productivity were weighed between 45% and 50% (final recovery), considering that the small scale represents a significant limitation for the purpose of achieving higher economic margins. Thus, it is inferred that the GoG strategy predicts benefits under different scenarios, between US$ 5.8 and US$ 23.3 million per year, to be met in five years without generating additional deforestation effects.

Table 6. Estimated benefits in gold mining.



Own source, based on MoNRE and GGMC data

* 1. In addition, significant reductions in mercury releases from ASM can be obtained by introducing mercury-free techniques and low-cost mercury capturing devices that allow a high rate of recycling. Take-up of such techniques will depend on training miners that will need to take account of the wider socio-economic and development contexts of the sector[[57]](#footnote-58)Because there are no previous studies in which the usual methodologies can be applied, putting a value on the estimated benefits of this action is complicated. In practice, in most of the world's mines, the mercury contamination has not been resolved, which makes it difficult to get an indication (however limited) of what the avoided costs might be. In addition, it is common for these environmental liabilities to not be addressed and accumulate for decades, transferring the cost of a solution to future generations.
  2. An approximation of the expected benefits that may result from applying the Minamata Convention to artisanal mining in Guyana is presented in the following analysis:

1. According to typical extraction levels in this sector, it is assumed that in Guyana between 1 and 2 grams of gold is recovered per cubic meter of rock removed. Gold production in the ASM sector averaged 10,350 kg per year. When both are taken together, 5.2 million tons of rock were removed in the three-year period between 2011-2013.
2. Remediating the contaminated soil and water is not a regular task, but rather requires a specific, technical, and expert analysis. However, it can be generally established that all the soil removed must be decontaminated, so that a reference to the volume to be treated is a solid indication of the minimum costs to be incurred.
3. In a report by the US Geological Services[[58]](#footnote-59) on the cost to remediate 9 mines in California, a range of costs was laid out that varied from US$ 1.2 and US$ 20.7 per cubic meter (average US$ 10.9 per cubic meter).
4. Given the above, it is estimated that the environmental liabilities avoided[[59]](#footnote-60) after consolidating a policy to eliminate mercury contamination would represent an annual savings of US$ 56.4 million.
   1. *Forestry.* The GoG strategy on certification of wood origin and legality has the following scheme: (1) operating under a general protection framework defined by seeking an agreement with the European Union, under FLEGT terms. As regards its conditions (negotiation established in Policy Matrix), current international certification systems are expected to be fostered, (2) once the above is achieved, it is estimated that conditions of demanding markets will act as a strong natural incentive.
   2. Evaluation of the benefits derived from the inclusion of certification systems faces restrictions, given the low maturation condition displayed by the local market. Conceptually, the incorporation of Guyana into the international marketing systems that rely on legally sourced and environmentally sustainable timber is critical, since the future of the sector foresees, not just a price differential, but the disappearance of non-certified product buyers. In this context, the sales channels would be reduced to informal circuits with no chance of subsistence[[60]](#footnote-61).
   3. The expected benefits of the PBB may be summarized on two segments of forest activity[[61]](#footnote-62): (i) *Primary sector.* Using as reference the FSC global survey[[62]](#footnote-63) on the perception of certified companies and a study on the US consumer market for timber it can be concluded that the market assigned value differential between certified and non-certified products is 20% of the price. In order to obtain general appreciation, it is estimated that through GoG intervention aimed at supporting the legal trade of forest products, at the current levels of activity,[[63]](#footnote-64) and (ii) *Added value products*. It is in this segment where most opportunities arise, since timber production development (and non-timber products) is very limited in Guyana. Progress in the value chain allows for increasing the indirect impacts of the activity[[64]](#footnote-65) [[65]](#footnote-66).
   4. The following table summarizes the main economic figures of the sector, showing the expansion forecasts made.

Table 7. Estimated benefits in forestry sector.

 Source: own source based on GFC data.

* 1. The table above reflects the current profile and the expected changes, estimated on the basis of the legalization and origin certification strategy for forest products supported by this loan. The increased revenue level, based on the ability to have access to more demanding, and therefore, more profitable markets (strengthening of the relationship with the European market under FLEGT agreement), is among the expected results, as well as the), the consolidation of the activity in the segment of manufactured products (basically in foreign market but also in domestic).[[66]](#footnote-67)
  2. The estimated benefits have been calculated for two alternative situations. In the Pessimistic Scenario, the benefits reach US$ 4.3 million, based in the fact that the commercial process will allow access to markets with greater demand and higher prices (FLEGT agreements and similar). The Optimistic Scenario adds advances in the industrial restructuring of the sector, with greater incorporation of added value. Under this assumption, the benefits extend up to US$ 7.3 million per year.

## Component 3. Institutional Strengthening.

* 1. Challenges. Guyana undertook a series of governance reforms from 2003 to 2011 that produced significant improvements in the quality of public expenditure and the reorganization of public finance. In this same course of action, the appropriate management of natural resources demands continuous improvements in the management of the public sector.

Component 3 Commitment. Includes:

1. MNRE Strategic Plan detailing adjustments to: (i) create Planning & Policy Unit; (ii) create Coordination Unit to cover existing agencies under MNRE; (iii) create mechanisms for effective coordination between extractive sector-related agencies.
2. Adoption of knowledge-based mechanisms to improve environmental management of forest-based sector effective coordination between extractive sector-related agencies

Link to PBL1: The anticipated actions to that end complement previous actions, which were: (i) approving the strategic plan of the MNRE for the 2013-2018 period; (ii) launching the climate change adaptation and mitigation strategy; and (iii) carrying out training programs linked to best mining practices, sustainable forest management and coordination.

* 1. *Evaluation.* The effect of the actions aimed at strengthening the capacity of the institutions responsible for the mining and forestry sectors - which is the focus of this evaluation - cannot be objectively separated from the expected effects of the full implementation of the regulatory framework. Therefore, the activities expected under this component are introduced exclusively in a qualitative manner within the economic justification of the project. The increased capacity of the GoG's institutions translates into the implementation of policies and strategies that in the end have an impact on the income or productivity level of economic stakeholders. It is assumed that these benefits are collected in the analysis of expected effects on productive sectors in the remaining components.

## Component 4. MRV System.

* 1. Challenges. Under the REDD-plus Governance Development Plan (RGDP) guidelines, monitoring and control of forest management is critical. The implemented measures (by the MoRNE) focus on controlling the degradation caused by extractive activities.

Component 4 Commitment. Includes:

• Development of a fully functioning national MRVS.

Link to PBL1: Provide the basic instruments and then strengthen the MRVS.

* 1. From 2011 to 2013, studies were done that show that the deforestation rates are regularly falling. At the same time progress was made in the development of scientific knowledge that allows the evaluation of degradation levels, particularly that caused by the mining sector. The contribution is to strengthen Guyana's capacity to manage forest resources through its evaluation and monitoring of degradation and deforestation levels[[67]](#footnote-68).
  2. These actions[[68]](#footnote-69) are vital to strengthening the GoG's scientific knowledge capacities. This will allow for the evaluation of degradation levels, particularly of degradation caused by mining, infrastructure, or forest sector actions, so that the application of the development policies is consistent with the objectives established in the LCDS. This set of tools is vital for appropriate planning, in order to anticipate eventual future problems: (i) a decrease in the flow of funds received by Guyana under the MoU with Norway, since the payments are adjusted based on the maintenance of the deforestation rate within predefined parameters; (ii) inappropriate land use strategies in developments that threaten future estimated carbon emission limits.
  3. According to NORAD evaluation[[69]](#footnote-70), one of the clear successes of the Guyana-Norway partnership has been the development of a fully functioning national MRVS. This achievement is in large part due to the timely development of a road-map for developing the system, and also the quality of the staff at the GFC. The system has successfully completed three rounds of reporting and independent verification.
  4. *Evaluation.* To the extent that the MRVS operation is part of a planning and tracking activity and therefore is not expected to have an impact in addition to the one anticipated for the regulatory framework component, this component is not subject to separate economic evaluation. However, since this system is fundamental for successful decision making in the implementation of the LCDS, it is also a part of the economic justification of the project.

# PBP Costs.

* 1. The Program budget includes the following disbursements:

1. PBL 1 disbursed in December 2013, in the amount of US$ 16.92 million.
2. PBL 2, the operation being analyzed, in the estimated amount of US$ 17.16 million.

Adding both disbursements, the total commitment of the present PBP increases to US$ 34.08 million.

* 1. Given the nature of the payment, the funds are freely available and are not linked to specific acquisitions, since the focuses of the intervention are defined by the Policy Matrix.
  2. Investments linked to the initiative. Despite what is laid out in the above paragraph, it is helpful to provide a reference of investments that the GoG is making in actions tied to the aims of the present interventions, financed with the REDD+ Program resources. Based on the information received on 03.31.2014, emphasis is placed on the following:

1. Entity Institutional Strengthening project US$ 5.9 million (GY-G1002, prepared by IDB in 2011).
2. Micro and Small Enterprise Development Fund project US$ 5.0 million.
3. Amerindian Land Titling Project US$ 7.9 million.
   1. In addition, in July 2014 the GoG received a loan of US$ 11 million from the World Bank to reduce floods in the East Coast of Demerara. More than 300,000 people in the area will benefit from greater control over climate risks.

# Economic Justification of the Program.

* 1. From a global perspective, each one of the 4 components that comprise the PBL contributes to sustaining the political drive aligned with the objectives set forth in the MoU, the REDD+ and the LCDS. Maintaining a stable macroeconomic framework (Component 1) will contribute to sustaining an atmosphere that encourages private investment and will facilitate access to new sources of financing; progress with regard to the regulatory framework (Component 2), institutional strengthening (Component 3) and verification tools (Component 4) will define the strategy and maintain alignment with the goals defined by the GoG.
  2. Macroeconomic Stability. Promoting economic stability (Component 1) drives a virtuous cycle that encourages saving and creates favorable conditions for productive investment, causing a greater level of activity and, in turn, growth. This condition not only drives economic activity and its multipliers effects (employment, generating currency, increasing fiscal revenue), but is also a fundamental support for sustaining the investment programs that the economic restructuring requires.
  3. This maintains a close link with the anticipated investments in the LCDS framework (adjusted version 2013) that is summarized in the following aspects: (i) the hydroelectric projects total US$ 880 million. A necessity for energy restructuring, the process of defining the convenience of installing a mega reservoir or other, smaller units[[70]](#footnote-71) is an important instrumental decision, that does not alter the policy's orientation (improving competitiveness), (ii) the development of high-potential sectors (entrepreneurship, eco-tourism, and aquaculture) will require US$ 40 million; (iii) the development of communities in the interior requires US$ 36 million and (iv) Adaptation to Climate Change requires US$ 62 million. At this stage, these values are for reference, since the dynamic of the LCDS calls for a further revision, adjustment and validation of these actions.
  4. The information in the previous table indicates the priorities set by the GoG. Its implementation and success broadly exceeds the reach of the current IDB intervention, requiring additional resources and efforts. It is notable that the implementation hydroelectric plants will allow Guyana to move from being an economy that is almost 100% dependent on fossil fuels to move to energy provision supported 90% from renewable resources. This will bring savings estimated by the GoG at approximately US$ 150-175 million (due to differences in the price of operational input) which will translate into a substantial improvement in the competitive conditions of the productive sectors of the country[[71]](#footnote-72).
  5. Mining and Forestry Sector Reforms. It is thought that this intervention, based on the strengthening of the management capacities of the public sector and through an improved regulatory framework will contribute to the following achievements:

1. Gold Mining. The continued growth of gold mining along the current trajectory of increased activity and areal coverage, reduced efficiency, and increasing impacts could result in great challenges to meeting Guyana’s commitments under the LCDS and Norway Agreement, and jeopardize realization of potentials for non-extractive uses.
2. According to experiences in exploitations in other locations, productivity in terms of area unit could be increased from the adaptation of more efficient clean technologies on this matter. The GoG, supported by the current PBP, has predicted funding for the studies enabling to structure the aforementioned adaptation, by verifying the consistency of economic feasibility of these initiatives in low and medium-scale mining operations.
3. On conservative basis, considering adoption levels in 25% of miners to be met 5 years after the adaptation and the net effects have been technically validated in terms of 12.5% increased productivity, the potential benefit estimated is in the amount of US$ 5.8 million per year. It is worth remarking that this goal has been put forward observing the restriction of not generating additional deforestation-related effects.
4. Eliminating use of mercury implies a reduction in terms of Environmental liabilities. According to current production level and operational condition, remediation cost of environmental impact would represent a cost of US$ 56.4 Millions[[72]](#footnote-73).
5. Forestry. Conceptually, the incorporation of Guyana into the international marketing systems that rely on legally sourced and environmentally sustainable timber is critical, since the future of the sector foresees, not just a price differential, but the disappearance of non-certified product buyers. The GoG strategy as regards origin certification and legality of wood will operate in the general protection framework defined by the agreement with the European Union, under FLEGT terms, included in the commitments of the Bank policy matrix. Thereafter, the aim is to foster development of the different internationally valid certification systems. Considering the conditions of demanding markets constituting a commercial incentive, great development opportunities may arise.
6. According to references[[73]](#footnote-74), it can be concluded that the market assigned value differential between certified and non-certified products is around 20% of the price. It is estimated that through GoG intervention aimed at supporting the legal trade of forest products, at the current levels of activity, there could be additional income in the amount of US$ 4.3 million annually in the primary and added value production. In addition, this represents a significant move towards the expansion of the value chain, enhancing the opportunities for forest-based manufactures, where a potential of additional profits is detected in the amount of US$ 3.0 million per year.

# Sensitivity Analysis.

* 1. The sensitivity analysis in view of adverse conditions can be approached in two ways: the first is the existence of the conditions that guarantee LCDS sustainability and financing sources; and the second is the probability of obtaining the expected economic benefits for the mining and forest sectors.
  2. It is considered that there are conditions favorable for the sustainability of the MoU-LCDS scheme and the REDD+ mechanism. In particular, the condition of maintaining the deforestation rate in the expected range (between 0.056%[[74]](#footnote-75) and 0,100%) is considered an achievable goal. At present, the GoG is making a concerted effort to keep this rate under control, given that its failure to comply would cause two negative effects: (i) a decline in available funds under the agreement with Norway to sustain the restructuring investments; and (ii) a change in the orientation of the policy, its implementation and/or the control systems.
  3. On the other hand, the analysis of projected benefits for the initiatives intended directly for the mining and forest sector, has been carried out based on conservative budgets. In the case that the progress concerning regulation in the ASM segment leads to less impact than anticipated (only 10% of miners adopting new clean technologies), the scenario estimates annual profits of US$ 2.3 million.
  4. In addition, in the case that forestry strategy on environmental certification and legality does not reach the anticipated scope in terms of dissemination, so that only 10% of the primary producers adopt this mechanism, the estimated profits would decrease to US$ 2.1 million per year. Finally, if value chain progress is delayed due to the impossibility of adapting new technologies or including new and more productive species, the expected higher profits would be reduced to US$1.5 million.

# Annex I: Joint concept Note

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-plus1), the protection of biodiversity, and enhancement of sustainable, low carbon development.

Joint Concept Note (JCN) set out the framework for taking the Guyana-Norway co-operation forward and how Norway would provide Guyana with financial support for REDD-plus results, and formed the basis for the first payment from Norway to Guyana.

***Section 1: Introduction.***

The JCN sets out how Norway is providing, and will continue to provide, financial support to Guyana, based on Guyana’s delivery of results as measured, and independently verified or assessed, against two sets of indicators:

*REDD-plus Performance Indicators:* A set of forest-based greenhouse gas emissions-related indicators. Results against these indicators will be independently verified according to the established practice of the partnership. 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.

*Indicators of Enabling Activities*: Indicators are identified that can be independently assessed through publicly available information on progress regarding a set of policies and safeguards to ensure that REDD-plus contributes to the achievement of the goals set out in Paragraph2(c) of the MoU signed between Guyana and Norway:

* protect the rights of indigenous peoples,
* ensure environmental integrity and protect biodiversity,
* ensure continual improvements in forest governance,
* provide transparent, accountable oversight and governance of the financial support received.

Norwegian financial support is being channeled through a multi-contributor financial mechanism – the Guyana REDD-plus Investment Fund (GRIF). The support is financing two sets of activities:

1. The implementation of Guyana’s Low Carbon Development Strategy (LCDS).
2. Guyana’s efforts in building capacity to improve overall REDD+ and LCDS efforts.

The first payment to the GRIF was made in October, 2010 and the second payment in March 2011 for results achieved between October 1, 2009 and September 30, 2010. The third contribution was announced in December 2012 for forestry results from January 1st to December 31st 2011 and for results on indicators of Enabling Activities from October 1st 2010 to December 21st 2012.

The annual progress in developing the MRV system and in strengthening the quality of REDD-plus-related forest governance will be defined as steps towards reaching these goals.

Section 2: Enabling Activities.

The continuation of result-based financial support from Norway to Guyana will depend on publicly observable progress on forest governance, as outlined below,

1. 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. The contributions to Guyana’s 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 on the relevant website of the Government of Guyana, and through national systems of public disclosure, including to the National Assembly.

*Goal of the partnership: By the end of 2014, the Governments will make one or more joint submissions to the UNFCCC, covering each area where there the Governments believe that there are shared lessons that will help the global multilateral process.*

1. Continuous multi-stakeholder consultation process. Particular attention will be given to the full and effective participation of indigenous peoples and other forest-dependent communities.
2. Governance. A transparent, rules-based, inclusive forest governance, accountability and enforcement system for forest governance in Guyana is being progressively strengthened, in accordance with Guyana’s outline REDD-plus Governance Development Plan (RGDP) and the enabling activities for 2012. Implementation of a GoG (MNRE) programme, with actions focused on specific efforts to manage degradation from extractive activities where this needs to be done, including, for example: the start up of an enhanced miners' environmental knowledge programme through a mining extension service initiative and enhanced dialogue with the sectors and relevant stakeholders towards ensuring that sectorial best practices are applied and sustained thereafter.
3. The rights of indigenous peoples and other local forest communities as regards REDD-plus. These rights will be respected and protected throughout Guyana’s REDD-plus and LCDS efforts.
4. Integrated land-use planning and management. A key element of this system should be a publicly available map of area use (including, but not limited to, full transparency regarding existing and planned concession and reconnaissance areas for forestry and mining, titled lands for Amerindian communities, areas planned and concessioned for industrial agriculture etc.). The measures taken will as a whole be in line with Guyana's stated goal of maintaining 99,5 per cent of its forest for the duration of the partnership and stay on a similar trend after 2015, though the degree of forest protection will depend on various factors, including the availability of international climate finance.
5. Monitoring, reporting and verification. Guyana has established a deforestation baseline and performed two forest area assessments for the years 2009-10 and 2010-11..

*Goal of the partnership: Guyana has implemented the MRV-roadmap and reached a reporting level incorporating several Tier 3 elements by the end of 2015. These Tier 3 elements include, but are not necessarily limited to, the use of high resolution data at national level that allows for disaggregation, the use of methods that provide estimates of greater certainty than lower tiers for key carbon pools, the use of comprehensive field sampling that is linked to GIS based systems which integrates land use and management activity data, and is subject to quality checks, and validations*

*Section 2.2 Assessing Progress Against Enabling Indicators.*

Guyana and Norway have agreed that the necessary information to assess Guyana’s delivery on these indicators will be easily accessible in the public space..

**Section3: REDD-plus performance indicators.**

Guyana is being paid for its performance through an incentive structure which rewards keeping deforestation below an agreed reference level, as well as avoiding increased forest degradation.

* *Section 3.1.1 – Measuring Avoided Deforestation and Forest Degradation*
* *Section 3.1.2 Converting to Avoided Greenhouse Gas Emissions*
* *Section 3.1.3 Calculating Payment*

Payments due to Guyana will be calculated by applying an interim carbon price of US$5/ton CO2, as established in Brazil’s Amazon Fund. However, this price will only be applied if Guyana’s observed deforestation rate is below the agreed level.

At the same time, Guyana’s national development requires limited but strategic use of forest assets to enable (i) a limited amount of economic activity to take place within the forest, where the economic value to the nation of such activity is very valuable; (ii) a limited amount of essential national infrastructure to be constructed where this is in line with critical development goals; (iii) support for the sustainable development of forest villages. Guyana is reaching a stage of economic development where experience from other countries suggests that enabling these objectives brings further deforestation pressures.

The essence of this approach has two implications:

1. One-off predictable and controllable deforestation events will be allowed for critical national infrastructure that is part of Guyana’s transition to a low carbon development path.5 During the duration of the current Guyana-Norway partnership, the only such event will be the construction of the Amaila Falls hydro-electricity plant. This plant is the flagship of Guyana’s Low Carbon Development Strategy, and is expected to eliminate over 92% of the country’s energy-related emissions, after the emissions associated with its construction are accounted for6. It will only go ahead after Guyana and Norway have agreed that the necessary Environmental and Social safeguards have been met, and an independent verification agreed by Guyana and Norway confirms the overall beneficial effects of the project from a climate change perspective.
2. Economic activities will be permitted within the forest, within a ceiling on deforestation of 0.056 per annum, without any financial penalty apart from the reduction in compensation caused by a smaller margin between the reference level and the verified deforestation level. For any deforestation rate up to this level, Guyana will be eligible for payments equaling the full margin between the reference level and the verified deforestation level. For deforestation rates between 0,056 per cent and 0,1 per cent (unless they relate to the Amalia Falls project as described above), eligibility for payments would be calculated as a gradually decreasing percentage of the payments that would be due if only the margin between the reference level and the verified deforestation level were taken into account, as set out below. At deforestation rates at or above 0,1 per cent, no payments would be due to Guyana for that given year.

This approach is compatible with the Government of Guyana’s declared long-term strategy to maintain the maximum amount of forest cover in Guyana, if an appropriate incentive structure is in place to make this strategy viable. This is being done through a balanced mix of maintaining forests under full protection (areas where only small-scale subsistence farming by forest dependent communities is allowed) and sustainable commercial forest management (where existing forestry concessions can operate within the terms of their licenses and the GFC’s sustainable forest management guidelines).

It is also likely that while support from Norway will be sufficient to provide majority funding for results delivered by Guyana, in a given year, it is unlikely to equal the total sum owed to Guyana. Therefore, to ensure that the incentives which underpin the partnership are fully in place, Guyana and Norway will work together to seek to get other Participants to join the partnership.

Section 3.2 Monitoring Progress Against reducing emissions and enhancing removals of carbon in Guyana’s forests.

Progress against reducing emissions and enhancing removals of carbon in Guyana’s Forests will in time be measured through the MRV system that is being put in place as set out in the MRV-system Road-map. During 2009-2011, significant improvements to Guyana’s ability to measure deforestation indicators were made. In particular, it was determined (and independently verified) that deforestation rates were extremely low. Progress has also been made to gain a greater understanding of how degradation is to be measured, and this leading to further work in 2013 and onwards, when new scientifically-based knowledge will enable progress on refining the reporting on indicators to assess degradation, including that from mining and infrastructure (currently the dominant drivers of degradation).

Guyana and Norway have agreed that annual independent verification of REDD+ performance indicators will be conducted by one or more neutral expert organizations, to be appointed jointly by the Participants. For the first and second reporting periods, the measurement of progress was carried out by Poyry, Indufor and WinRock in collaboration with the Guyana Forestry Commission, and independent verification was carried out by DNV. DNV was selected on the basis of an international tender process in accordance with Norwegian procurement regulations.

**Section 4: Financial mechanism:**

The Guyana REDD+ Investment Fund (GRIF) is channeling REDD-plus financial support from Norway and other potential contributors to the implementation of Guyana’s LCDS.

Pending the creation of an international REDD+ mechanism, the Guyana REDD+ Investment

Fund (GRIF) represents an effort to create an innovative climate finance mechanism which

balances national sovereignty over investment priorities with ensuring that REDD+ funds

adhere to globally accepted financial, environmental and social safeguards.

The GRIF is an interim solution for channeling climate finance to Guyana - designed for the Guyana-Norway Partnership up to 2015 - pending the transfer of payment intermediation, and associated processes, to Guyana’s national systems. Until such time as national systems can be used, the World Bank’s International Development Association (IDA) was invited by Guyana and Norway to act as Trustee and is responsible for providing financial intermediary services to the GRIF.

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# Annex II: LCDE[[75]](#footnote-76).

The Strategy of development with low carbon emissions (LCDS) contemplates two primary targets:

to transform the economy to reach a greater economic and social development of its population, being supported its strategy in a model of low carbon emissions; and

to offer a successful example to the world on the way in which the phenomenon of the Climatic change can be faced from the countries developing, impelling that way to that the international community takes oriented collective actions to a global solution, specially in the related thing to mechanism REDD+.

Base and requirements of the LCDS

* Identify a world-wide partner who shares environmental values and bets to the capacity of the developed world to contribute solutions to the CC. It allowed to sell the environmental services through second agreement REDD+ in terms of world-wide relevance.
* Long-term planning The glance on the problems related to l CC and therefore their solutions requires a perspective, ample, dynamic, opened and of long reach.
* social Appropriation and institutional responsibility. The political commitment must extend the administrations, becoming a policy of State.

Definition of the strategy year 2009. After solved the related problems to the public indebtedness, the GoG was as opposed to the strategic decision of how directing its development. Taking advantage of its economic profile, supported in the natural resources and specially the strength of its forest segment (covering 85% with its territory with little impact of the deforestation), the opportunity was identified to direct its model of development by way of innovating mechanisms. In the fort context it debates tie to the CC, the policies impelled by several developed nations opened the space to that Guyana could capitalize the virgin environmental services that their area provide to the planet[[76]](#footnote-77), acceding by that route to monetary resources that finance the investments necessary to grow and to gain competitiveness.

The paper of the REDD. From 2007, the international community, through the United Nations Framework Convention on Climate Change (UNFCCC), has decided measured to promote the reduction of emissions of the deforestation and the forest degradation, next to the sustainable handling of the forest resource. Due to the environmental benefits that these ecosystems offer, they favor other actors whose contributions are not relevant (or still negative) so is appropriate that these pay for the reception of these services. The mechanism used by UNFCCC to achieve this goal is called REDD+.

*ECV versus EWV[[77]](#footnote-78)*

A fact based analysis by McKinsey and Company showed how the economic value to the nation (referred to as EVN) of such uses could be the equivalent of a US$580 million annuity, whereas the EVN of REDD+ at that time was zero. The challenge was to create the economic incentives to increase the EVN of REDD+ so that it could start to make forests worth more alive than dead, while at the same time generating the necessary capital to invest in Guyana‟s low carbon economy

Main actions of the LCDS.

The central idea of the LCDS is to use the financing generated by way of the REDD+ for investments that generate growth economic, while simultaneously the forest handling stays under control (and with it the deforestation and degradation) while at the same time the reduction of gases is promoted effect conservatory.

The raised measures include.

• Investment in infrastructure with low carbon emissions, including a hydroelectric dam (Amalia falls); facilitation of access to non-forested cultivatable land and improved fiber optic provision.

• Promotion of the investment in high potential, low carbon emission sectors (fruits and vegetables, aquaculture eco-tourism and outsourcing).

• To reform the forest dependent sectors (mainly mining and forestation) so that they work under strict models of sustainability.

Expand the access to the services and to create new opportunities for the native communities, among them sustainable access, power plants to the water and opportunity of uses in compatible areas with the sustainable forest handling.

• To improve the range of services and opportunities for all citizens of Guyana, including stimulation for private activity, entrepreneurship and the expansion of the basic social services, among them health and education.

Reduce the vulnerability of the CC effects[[78]](#footnote-79).

Temporary financing REDD+.

When in the 2009 first rough draft of the present strategy was published the GoG, based on the conversations at international level, hoped that mechanisms remembered tie financing to this subject. Nevertheless, the lack of consensus lead to

delays in structuring agreements that are not considered can be obtained before 2020. In the interregnum period until then, the necessities of the nations of forest profile have been canalized by this mechanism, although with a limited success because only 3 countries: Guyana, Brazil and Indonesia have been capable to accede to excellent amounts of attendance.

LCDS First stage (2009 -2013).

The priorities established originally have to the date the following degree of advance:

* Renewable Energy.
* Indigenous communities:
* Power Development. To March of 2013 solar paddles were installed in approximately 11,000 homes, as well as systems of fluvial generation in low scale.
* Socioeconomic Aspects. They treat through strategic plans.
* Earth Degree. 14% of the present territory correspond to these communities, having the GoG commitment to complete the process of registration in the following the 3 years.
* Reduce the digital breach: It includes several advances: (a) 560km of optical fiber to connect the coast with the rear area, and in the future next to tie with Brazil, (b) to advance in the initiative of one laptop by family who included the delivery of 26,832 units, (c) to approve a regulatory law of the telephone liberation, the one that is in discussion with the 2 greater suppliers.
* Support to Small and Mediana Company (SME): Initiatives in activities of low generation of carbon emissions have been supported thus creating 2,200 new jobs.
* Adaptation to the CC: Approximately 39% of the population and 43% of the GDP are exposed to the risk of floods. In order to fortify the capacity to face these phenomena channels have been constructed that allow a more appropriate handling of the extreme events.
* Creation of the Ministry of Natural Resources (NRV)[[79]](#footnote-80). The administration that has taken the GoG after elections of 2011 defined that like one of its measures

LCDS Second phase (2013 -2015).

In this stage the GoG is concentrated in 5 priorities:

* To improve its infrastructure to face flooding, which includes to fortify the capacities of the irrigation system and drainage, dredged of the rivers, expansion of the use of mangroves, as well as other significant advances of protection of Georgetown, the east bank and the east Coast.
* Hinterland Adaptation of the rear area, by means of the incorporation of varieties of plants, crops handling system, in addition to the construction of routes, bridges, systems of irrigation and drainage in the most vulnerable zones.
* Programs of early alert.
* To impel the sectors defined in the Program of Competitiveness (aquaculture, ecotourism, outsourcing and vegetable/fruits).
* To support the development of the indigenous communities (Opt In program, to accede to the REDD+).

Internal appropriation of the project.

All the investments have been incorporated to the National Budget, and their advances are supervised by the Legislative Assembly and in close contact with the interested social actors who exert tracing and indirect close control.

Investments within the LCDS framework.

Table1: Investments executed in period 2009-2011 (source LCDS Update 2013).

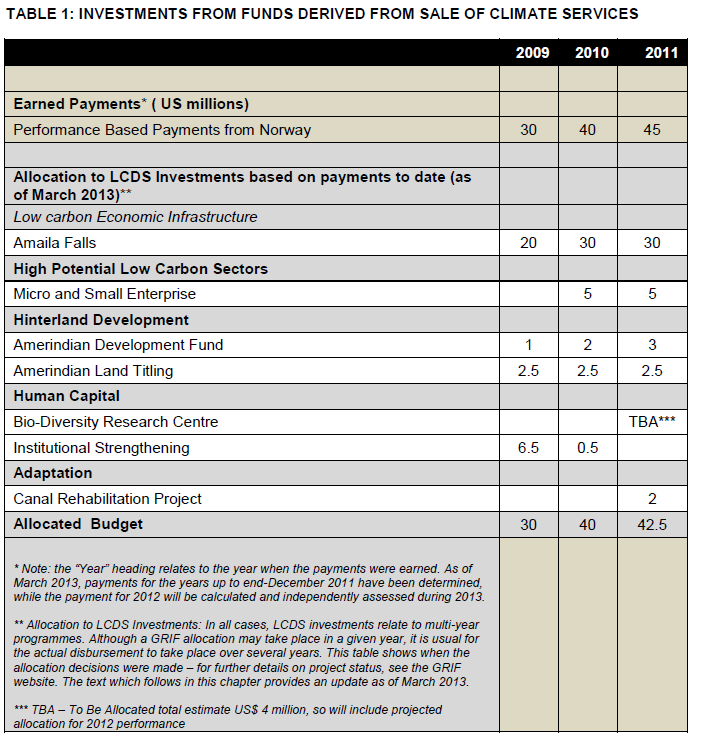


Table 2: Executed 2009-2011 and projected investments for 2012-2013 (source LCDS Update 2013).





# Annex III: Guyana Forestry Commission.

*Mission and objectives.* The great forest heritage in Guyana, managed mostly by the State, needed proper administration that would take advantage of this resource, actively incorporating it into the country's economy and ensuring its protection through sustainable forest management. The organization designated to administer this resource is the Guyana Forestry Commission (GFC), created with this purpose in 1979. The GFC is directed by a Board of directors, appointed by the President of the Republic, and is responsible for the country's forestry sector. This institution is headed by the Commissioner of Forests, who is responsible for its day to day operations, the application of the laws and regulations in the sector and the granting of logging concessions, all of which are among its principal duties.

The use of state forests in Guyana is given through the granting of operation concessions to private companies and individuals. These are granted by the GFC to companies that comply with the corresponding requirements, using different modalities: (i) Agreement on the sale of timber: are long-term concessions, up to 25 years, for areas of more than 24,000 hectares, (ii) Logging leases: up to 10-year terms for areas between 8,000 and 24,000 hectares and (iii) State forest permits: for a maximum period of two years and no more than 8,000 hectares.

*Log Tracking System (LTS).* It allows verification of the origin of forest products, so it is also used as a way of controlling illegal logging. The method, which is a true chain of custody of forest products, has been recognized by several international certifying organizations. Regular audits (by ITTO - International Tropical Timber Organization, and WWF - World Wildlife Fund) have taken place to check its operation, to verify its effectiveness and to improve its systems.

Budget. Regarding the GFC annual budget, it is US$3.5M and the cost of the MRVS when fully operational (and no development needed in any substantial way) is around US$400,000 to US$500,000 at a maximum. The imagery cost is US$269,000 and the remaining cost will be mainly reporting, accuracy assessment, and field work costs.

# Annex IV. Mining Sector Evolution.

*General ideas.*

The issue is to outline the way in which the extractive industry can be aligned according to the structure and objectives of the LCDS, while in the same way and at the same time the LCDS implementation can allow higher contribution of the sector to the economic development of the country.

Since the benefits of the mining sector are principally appropriated by the private sector, the investment decisions are made by these stakeholders. However, the orientation of public policies and the regulatory framework play a crucial role in guiding investments towards the desired objectives. This requires planning of the economic aspects incorporating a broad perspective, including geographical and land use aspects.

A common development strategy is incorporating added value to basic products. This is true in the case of bauxite, where there is an opportunity to convert the mineral into aluminum. However, viability requires the development of complementary industries, infrastructure and human capacities, which reinforces the idea of framing the process in long-term global plans.

Guyana is no exception with regard to its economic profile exhibiting high dependency on natural resources, like many other nations. In many regions the experiences contributed to defining a phenomenon known as *Resource Curse*. This term describes the empirical observation exhibited in various countries that had inadequate management of resources or crises caused by mismanagement of resources, in many cases with economic development below other countries that do not have said resources.[[80]](#footnote-81)

The challenges created by availability of resources are substantial, which is why their management requires broad planning, with a long-term focus. Among the problems caused by mismanagement is the so called *Dutch disease*.[[81]](#footnote-82) This establishes that the emphasis on natural resource extraction causes a decline in internationally viable goods. The sequence is: (1) the increase in the exploitation of resources leads to an appreciation of the local currency, making exports less competitive, (2) imports are cheaper, thereby reducing the margins of other domestic sectors; (3) demand is moved to other internationally non-tradable products (construction and various services) which tends to make wages and other factors of production increase, driving down the profitability of the exportable products sector. As a result, the economy ends up being dependent on two segments: extraction of natural resources and internationally non-tradable household products.

*Gold mining in Guyana.*

Production increased 48% for 5 straight years from 2007-2011 due mainly to small and medium-scale producers[[82]](#footnote-83). In 2011, there were nearly 15,000 small-scale miners, a total that is 5% higher than one year ago. At the same time, permits for medium-scale operation increased 57% in the same period, reaching 1,100, reflecting a sustained trend in recent years. The following table reflects the trend in the volume of gold production between 1997 and 2012, where the trend of said producers is observed, with the bulk of the operation being carried out by the Omai mine.[[83]](#footnote-84)

*Diagram A. Gold production in Guyana 1997-2012*



*Source: GGMC*

Along with an increase in production there was also an increase in the price of gold, which increased the importance of the mining GDP on the national economy. The graphic below shows the correlation between the price of gold (in red) and the sectorial income (in blue). Between 2007 and 2011 sector sales increased by a factor of 3.5.



Although there is little information regarding the structure of production costs of the sector, it is calculated that the price trend has strengthened the benefit levels. Guyana Gold Board estimates indicated costs between US$ 240 and $ 300 per ounce in 2011.

Mining has also made an important economic contribution as a provider of foreign exchange, being the major export industry in Guyana. Its role in generating foreign exchange is even more prominent given the nature of the industry. As all the gold produced today is from small and medium scale producers, the majority of which are Guyanese, a larger share of this foreign exchange most likely remains within country than if it was generated by large, international operators. This is an important fact to take into account should the industry evolve in the future away from small local producers to large international operators.

*Implications of mining expansion (Business as Usual)[[84]](#footnote-85)*

The continued growth of mining along the current trajectory of increased activity and areal coverage, reduced efficiency, and increasing impacts can no doubt result in great challenges to meeting Guyana’s commitments under the LCDS and Norway Agreement, the CBD, and jeopardize realization of potentials for non-extractive uses. Business-as-usual growth in mining will most certainly result in, inter alia, increased deforestation from the sector, utilizing a greater portion of the deforestation budget, and greater biodiversity and fresh water impacts as new areas are opened up for extraction.

In the case of small- and medium-scale gold mining, as discussed earlier, over the past two decades the efficiency (in terms of gold extracted per hectare of forest cleared) has decreased as production increased. If this trend continues, it would imply that further expansion in gold production would result in increased deforestation, thus threatening Guyana's ability to meet its commitments and realize future growth.

Mining as carried out currently results in direct impacts to biodiversity and competes for land with valuable biological resources, presenting challenges for the achievement of the commitments under the CBD. Current legislation allows for mining to be conducted in most of the country and competes with other land uses, such as the establishment of protected areas, sometimes resulting in major conflicts. In areas of valuable biological values, this competition results in higher costs of the establishment and management of protected areas.

Though a large number of studies exist practical evidence-supported options for acceptable “green” mining technologies and practices that are economically feasible under Guyana's conditions is still lacking. Therefore, the approach to effecting change within Guyana's EIS has to essentially provide some proof of concept through pilot projects. Essential to this is the training of relevant stakeholders, from both private and public sectors, and the dissemination of information country-wide.

Significant new investments in the sector include two major[[85]](#footnote-86)

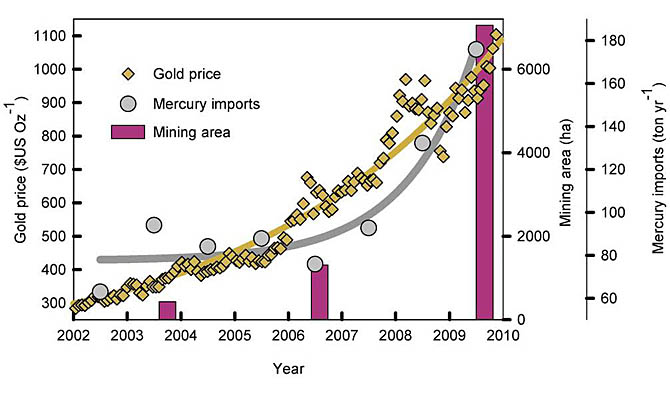
Going forward, orderly growth and development and capacity building will be Government's focus. Significant new investments in the sector include two major gold exploration projects, Guyana Goldfields Inc. and ETK Inc/Sandspring Resources Ltd, both of which are at the resource assessment stage. Guyana Goldfields Inc. announced positive feasibility study results for its Aurora Gold Project in Guyana with the total investment expected to amount to US$ 600 million and seeing 250 jobs created during development phase and 200 created during mine operation.

In the case of the Toroparu mine being developed by ETK Inc/Sandspring Resources Ltd., the total investment is projected at US$ 400 million, and 300 jobs will be created during development while another 200 jobs will be created during mining.

With these developments on course, the gold subsector is poised to continue to play a leading role in its contribution to growth, exports and job creation. The next five years presents Guyana with opportunities that will completely change the face of existing traditional industries with the gold industry witnessing the entry of a number of large scale producers bringing dramatic increases in production and the introduction of new technologies.

*The experience of Madre de Dios in Peru.*

In 2011, Peru was the sixth highest global producer of gold. However, according to the National Customs Superintendency of Peru and Swenson et al (2011), a considerable amount of Peruvian gold has been extracted by illegal companies that use extraction methods based on heavy metals such as mercury. These practices are far from sustainable and have had a strong negative impact on the environment. In addition, as shown in the figure, the increase in the price of gold was related to an exponential increase in the illegal mining field, followed by a sharp increase in imports of mercury. Additionally, improvements to the infrastructure of the roads in the region, such as the Interoceanic Highway (which connects Peru and Brazil) have facilitated the extraction process**.**

*Graphic B. Correlation between the price of gold and mercury imports.* *Relationship between the biweekly international prices of gold, the conversion of the forest to mining areas in Madre de Dios and annual mercury imports in Peru. Source: Swenson (2011)[[86]](#footnote-87).*

Deforestation is increasing in the Madre de Dios region of Peru due to dangerous, illegal, small-scale gold mining. In some areas the loss of forests has increased more than sixfold.

Using satellite images from NASA, investigators at Duke University were able to observe the increase in deforestation due to artisanal gold mining in Peru. According to the study, published in PLoS ONE, two mining sites saw the loss of 7,000 hectares of forest (15,200 acres), an area greater than Bermuda, between 2003 and 2009.

# Annex V: Results Framework – Matrix of Indicators

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Impact& Results** | **Indicator** | **Baseline** | **Target (2016)** | **Verification Means** |
| Impact: Annual deforestation rate: 0.056% sustained | | | | |
| Results:  Governance and policy framework that support the implementation of the LCDS strengthened and its sustainability improved | * Policy and regulatory framework enhanced | * LCDS version 2010 * Limited environment regulations for extractive industries | * LCDS 2013 update * Environment regulations for extractive industries reviewed/approved | * Press release * Reports |
| * MNRE strengthened by implementing its strategic plan | * MNRE does not have a strategic plan | * MNRE strategic plan approved and implemented | * Document of Strategic Plan * Reports on progress |
| * MRVS operative | * MRVS in start-up phase | * MRVS issues carbon impact, carbon stratification & carbon expansion assessments | * Reports of MRVS |

**COMPONENT RESULTS & INDICATORS**

| **Component** | **Indicators** | **Baseline**  **2013** | **Targets** | | | | | **Verification Means** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2013 | 2014 | 2015 | 2016 | |
| 1. **Macro-economic stability** | **Result 1: Continued macro-economic stability** | | | | | | | |
|  | Technical opinion IMA | Stable macro-economic framework | Continued | Continued | Continued | Continued | IMA annual report | |
| 1. **Regulatory framework** | **Result 2: LCDS implemented** | | | | | | | |
|  | LCDS update process completion | Draft | 1 update  2 GRIF projects starting implementation |  | 2 new GRIF projects defined and starting preparation or approved |  | | Press releases |
| Consultations on LCDS and reviews by MSSC | 0 | 1 MSSC meeting took place | 1 MSSC meeting took place | 1 MSSC meeting minutes approving REDD+ Stakeholders Awareness Plan |  | | Minutes of MSSC meeting |
| **Result 3: Forestry & Mining sector have improved environmental management and law enforcement** | | | | | | | |
| Review and application of environmental regulatory framework for extractive industries | EPA has limited regulatory framework to assume overarching responsibilities for environmental compliance  Forestry Act is current; most forest regulations up to date | 1 Review  1 Scoping study |  | EPA strengthened through:   * more solid financial base * more complete package of regulations * operating Compliance and Enforcement Unit   Amendments or regulations ensure consistency between mining, lands surveyors and protected areas  regulations and MNRE mandate  1 Opt-In proposal complete  1 National Land Use Plan complete | Access & Benefit Sharing (ABS) regulations approved and in force  1 Opt In system in place, as approved by Stakeholders  3 Regional Land Use Plans approved and preparing for implementation | | Reports by MNRE containing copies of approved regulations and other measures  Consultant report  Copy of documents approving Plans |
| Operational market-based mechanisms | Initial approach to Extractive Industries Initiative (EITI) | 1 country pre-candidacy for EITI  Code of Practice for Timber Harvesting into force | Code of Practice applied in 50% of concessions | Implementation Plan for Codes of Practice in force  Drafted Code of Practice for Mercury Use | Code of Practice applied to 100% of forestry concessions | | Press release setting up EITI Multi-Stakeholder group  Approval documents submitted by MNRE/GFC  Approval documents submitted by MNRE/GGMC |
| 1 report on technological improvements for extractive sector |  |  |  | | Letter by the Minister of NRE attesting to the receipt of the study. |
| 1. **Institutional strengthening** | **Result 4:MNRE has a Strategic Plan that provides for adequate inter-agency coordination and oversight to accomplish LCDS objectives** | | | | | | | |
|  | Strategic Plan detailing adjustments to: (i) create Planning & Policy Unit; (ii) create Coordination Unit to cover existing agencies under MNRE; (iii) create mechanisms for effective coordination between extractive sector-related agencies | Draft | 1 Strategic Plan submitted | 1 Strategic Plan approved | Strategic Plan implemented: (a) M&E Framework; (b)GIS Policy to improve coordination among NR agencies | Strategic Plan implemented: (a) indigenous issues identified and approached institutionally | | Record of formal submission of Strategic Plan to Minister of MNRE  Technical reports |
| Adoption of knowledge-based mechanisms to improve environmental management of forest-based sector | 0 | 1 training program on best-practices for mining  1 design of courses on EIA  1 draft National Log Tracking System | 1 Log Tracking System approved | National Action Plan for Mercury Abatement in force  2 training programs on mercury reduction in mining implemented | Mercury Free Development Fund receives at least one tender | | Technical reports  Records from MNRE/GFC  Reports from MNRE/GGMC  Report from MNRE/GGMC |
| 1. **MRVS** | **Result 5: MRVS capable of generating country-wide, verified reports on forest cover and deforestation drivers** | | | | | | | |
|  | Tools for Carbon Impact Assessment for main drivers developed, and Forest Cover database prepared | 0 | 1 Carbon Impact Assessment tool for main drivers approved  Report on forest area changes 2011-2012; Assessment report on forest carbon stratification; Report on carbon conversion and extraction | 1 report following up progress towards reduced deforestation and forest degradation | Forest carbon emissions and removals with IPCC guidance reported consistently | Integration of forest cover data from all MNRE agencies (Geonode Server operational)  Forest degradation information integrated within MRVS | | Record of decision of approvals by MNRE/GFC  Technical report  Technical report |

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1. Based on 2006-2010 average gold price, equivalent to US$ 874 per ounce. Source: World Bank. [↑](#footnote-ref-2)
2. The estimated benefits for a 20-year timeframe gradually increase to reach maturation over a period of 10 years. Estimated present value of benefits Pessimistic US$ 183.7 million, Optimistic US$ 267.0 million. [↑](#footnote-ref-3)
3. Shown in the Policy Matrix. [↑](#footnote-ref-4)
4. Detailed in the Results Matrix. [↑](#footnote-ref-5)
5. The PBP funds are freely available to the GoG, with no commitment to specific attributions or purposes. [↑](#footnote-ref-6)
6. Instruments and development: An evaluation of the operational modalities of the IDB loan. *Office of Evaluation and Oversight, IDB 2004.* [↑](#footnote-ref-7)
7. Toolkit for the Application of the DEM Sovereign Operations. SPD. January 2013. [↑](#footnote-ref-8)
8. No. 121 out of 187 countries, according to the Human Development Index, United Nations. 2013 (occupied the same position in 2012). http://hdr.undp.org/es/content/table-1-human-development-index-and-its-components [↑](#footnote-ref-9)
9. No. 102 out of 148 countries, according to The Global Competitiveness Report 2013-2014. WEF (occupied position 109 en the 2012-2013 ranking). [↑](#footnote-ref-10)
10. UN Framework Convention on Climate Change ([www.unfccc.int](http://www.unfccc.int/)). In view of the Convention, industrialized countries are committed to supporting climate change-related activities in developing countries, offering them financial support, without prejudice to other assistance. A system of donations and loans has been established, administered by the [Global Environment Facility](http://www.thegef.org/gef/node/2492). [↑](#footnote-ref-11)
11. Considerations relative to the value of conflicting exploitation patterns (Economic value to the nation vs. Economic value to the world) at the time that the Guyana-Norway agreement was signed are not the focus of this document's analysis. [↑](#footnote-ref-12)
12. The GoG notes that the success of the initiative would be an exemplary model to be replicated at other sites for the development of the REDD+ mechanism within the framework of the global climate change strategy. [↑](#footnote-ref-13)
13. Norway has contributed US$ 70 million to the fund since December of 2013 and an additional US$ 20 million will be disbursed this year after the audit conducted in 2012. The revision and validation of 2013 afforestation levels (estimated for the first half of 2014), will allow access to an additional disbursement similar to the latter. [↑](#footnote-ref-14)
14. The UNFCC has agreed upon measures to promote the reduction of emissions, deforestation and forest degradation using the REDD+ mechanism. [↑](#footnote-ref-15)
15. Four projects financed through this instrument with the participation of the IDB have been approved. [↑](#footnote-ref-16)
16. Consistent with the terms of REDD+. [↑](#footnote-ref-17)
17. Concerning management of climate change risks, the proposal conceptually supported by the quantification of avoided losses will be described. [↑](#footnote-ref-18)
18. Ministry of Natural Resources and Environment (MNRE). Created in 2011, it is responsible for the public policy and regulatory framework of natural resources, including protected areas, meteorology, pollution control, and policy definition and strategic management of environmental issues. [↑](#footnote-ref-19)
19. World Economic Outlook. April 2014. [↑](#footnote-ref-20)
20. Growth was stimulated by the solid performance of the rice and gold sectors, as well as results from the construction sector oriented towards large infrastructure projects. Rice production increased markedly (26.9%) supported by the PETROCARIBE agreement using rice exports to balance fuel imports from Venezuela. ECLAC. Guyana economic study. 2014. [↑](#footnote-ref-21)
21. In the first half of 2014, the provisional figures indicate a 0.4% reduction in prices. Mid Year Report. MEF. GoG. 2014. [↑](#footnote-ref-22)
22. The Central Bank intervened in the currency market, selling US$ 163.6 million, in order to maintain a stable nominal exchange rate. As a result, Guyana's currency depreciated marginally against the US dollar (0.86%) at the end of 2013, compared to the same period the previous year. ECLAC. LAC Economic Survey. 2014. [↑](#footnote-ref-23)
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24. The GoG has been under pressure in this regard since it lost its majority on Parliament in 2011. In 2013, the opposition was able to cut the budget presented by the executive before it was approved in the Parliament. Some government policies have been affected by the situation, including the LCDS, in light of greater difficulties in financing infrastructure projects. ECLAC. LAC Economic Survey. 2014. [↑](#footnote-ref-25)
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29. For the past 23 year the rate has been between 0.02% and 0.08% clearly below the international rate of deforestation for tropical countries. FAO reported 0.52% in 2009 and 0.44% in 2012. [↑](#footnote-ref-30)
30. Joint Concept Note. Section 3.1.3 Calculating Payment. “Economic activities will be permitted within the forest, within a ceiling on deforestation of 0.056 per annum, without any financial penalty apart from the reduction in compensation caused by a smaller margin between the reference level and the verified deforestation level. For any deforestation rate up to this level, Guyana will be eligible for payments equalling the full margin between the reference level and the verified deforestation level. For deforestation rates between 0,056 per cent and 0,1 per cent, eligibility for payments would be calculated as a gradually decreasing percentage of the payments that would be due if only the margin between the reference level and the verified deforestation level were taken into account, as set out below. At deforestation rates at or above 0,1 %, no payments would be due to Guyana for that given year.” [↑](#footnote-ref-31)
31. FDI grew 150% in the three-year period between 2010-2012, relative to 2006, concentrated in the mining and telecommunications sectors. ECLAC report. FDI in Latin America and the Caribbean 2013. [↑](#footnote-ref-32)
32. In this respect, Component 2 works together with Component 3, attempting to strengthen the public sector structures for greater application of laws and regulations. [↑](#footnote-ref-33)
33. Bureau of Statistics 2013. Gross Domestic Product at Current basic Prices. Table. 5.3. [↑](#footnote-ref-34)
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37. IFC has completed a $185 million financing package for the construction and development of Guyana Goldfield’s Aurora gold mine, located 170 kilometers west of Georgetown. July. 2014. [↑](#footnote-ref-38)
38. Gold mining activities normally transfer the cost of mitigating these effects to other water users, often affecting the value of the water services at a national level. Potable water suppliers and hydroelectric plants absorb costs linked to the increased sediment loads, which raise the cost of water processing and shorten the life of dams and turbines. But the additional impact is probably felt most in the Guyanese shield region due to the reduced energy of its freshwater systems, the relative absence of other land uses, high levels of forest cover and a high incidence of oligotrophic blackwater systems. Managing the Freshwater Impacts of Surface Mining in Latin America. Hammond, Rosales and. Ouboter. March 2013. IDB Technical Note. [↑](#footnote-ref-39)
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48. Paper. [↑](#footnote-ref-49)
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53. Source: GGMC. August 2013 and MNRE Costed Strategic Framework (“Mineral recovery rates of small mines in Guyana are from all accounts below 40% for fine gold”). [↑](#footnote-ref-54)
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59. The theoretical avoided expenses are calculated based on the average value of remediation costs and the volume of earth removed. [↑](#footnote-ref-60)
60. The REDD+ activities lay out the reduction of emissions in a way that satisfies the efficiency demands of a market-oriented system. Among its expected benefits are: (i) increase in income on a national level (royalties), (ii) creation of jobs, (iii) access to credit and other markets, (iv) creation of new businesses. The application of REDD+ may also create new opportunities for local communities and indigenous groups (alternate sources of income, such as the trade and later processing of sustainable timber and non-timber forest products). [↑](#footnote-ref-61)
61. Given that there are no Policy Commitments oriented toward the agricultural sector, there are no identifiable benefits for this activity. [↑](#footnote-ref-62)
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66. Current market trends represent a strong incentive for membership in certification systems. [↑](#footnote-ref-67)
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70. Alternative analized by the World Bank, according to the document Real-Time Evaluation of Norway’s International Climate and Forest Initiative. Norwegian Agency for Development Cooperation. August. 2014 [↑](#footnote-ref-71)
71. At the same time, the GoG has evaluated other expected benefits due to avoided losses linked to disasters and CC. In this case, the referred values are based on historical high impact level and low probability of occurrence. [↑](#footnote-ref-72)
72. These are costs that have not currently been incurred, because the remediation efforts are not being carried out. However, the negative effects on the environment are real and verifiable. [↑](#footnote-ref-73)
73. Sources: FSC global survey on the perception of certified companies and a study on the US consumer market. [↑](#footnote-ref-74)
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