

Guyana Forestry Commission

Invitation for Bids/Proposals

Invitation is open to both commercial and non commercial entities/organizations/bodies

Remote Sensing and GIS Consultant (Forest Area Assessment and Change Monitoring – Year 2)

Terms of reference and background information

July 15, 2011

Background to the Programme

The Government of Guyana has embarked on a national programme that aims to protect and maintain its forests in an effort to reduce global carbon emissions and at the same time attract resources to foster growth and development along a low carbon emissions path. Guyana has over 80% of its land area covered by forests, approximately 18 million hectares. There has been a relatively low deforestation rate in Guyana, reported at 0.02% to 0.06% per annum. Guyana is committed to provide a contribution to address the second most important source of carbon dioxide emissions world-wide coming from deforestation and forest degradation and is estimated at approximately 18% of global emissions.

The cooperation between the Governments of Guyana and Norway, expresses a willingness to work together to provide the world with a relevant, replicable model for how REDD-plus can align the development objectives of forest countries with the world's need to combat climate change. The initiative will require the development of capacities for monitoring, reporting and verification (MRV) of forest carbon stocks and changes.

While policy and compensations mechanisms for implementing REDD are still under discussion within the UNFCCC, the draft text on methodology for REDD+ produced by SBSTA makes it clear that not only reduced emissions from deforestation and degradation, but also forest conservation, sustainable forest management and forest enhancement to be included in the agreement. These three elements are jointly referred to as 'REDD +'.

This creates some certainty about the contours of the agreement and what will be credited, as well as opportunities to use a variety of approaches to measuring and monitoring. One key measure to quantify the role of a forest for climate change mitigation is the sum of the carbon stored in its terrestrial pools (i.e. vegetation biomass and soil carbon). It can be assumed that any change in the forest carbon stocks from direct or indirect human activities has an impact on the climate with the overall goal to reduce the amount of emissions to the atmosphere and to maintain or increase the overall terrestrial carbon pool. Thus, climate change mitigation activities currently under discussion encourage:

- the long-term conservation of forests to maintain its current or natural carbon reservoir,
- to change the impact of human activities (i.e. causing carbon emissions from land use) in forests to stabilize or increase terrestrial carbon stocks in the long-term,
- a change in current human activities towards reforestation of land to increase the terrestrial carbon sink.

These generic and fundamental objectives are addressed in the REDD+ and the LULUCF discussions in a number of concepts, such as deforestation, forest degradation, forest conservation etc. These reflect the need to specify policies to alter human activities towards a more climate friendly way. This includes means to measure and report carbon impacts on the local, national and global level. Current international REDD+ discussions are dealing with carbon and emission-oriented approaches, the national implementation has to consider a cause- or driver oriented perspective to design and implement useful policies.

It is currently not practical nor efficient to measure and report the stocks and changes for the whole terrestrial carbon reservoir with the level of detail and certainty to address all drivers and processes that have a carbon impact on the land. REDD+ readiness activities in Guyana

have commenced and are expected to progressively build over the next few years, and includes priority setting given that:

- Countries, in general, start from a diverse set of backgrounds in terms of historical drivers and changes in forest carbon; expected future land use changes due to their development objectives; and current capabilities for measuring and monitoring forest carbon on the national and local level.
- current human land use impacts causing carbon emissions are focused in specific areas and regions and should, perhaps, be primarily addressed in the very near-term. However, it is the long-term stabilization or increase of the terrestrial carbon reservoir as a whole that will decide on the effectiveness of the activities initiated today and to eventually implement a low carbon development strategy for Guyana,
- resources to address REDD+ will be limited and not suitable to address all issues everywhere at the same time. While all requirements and forest change drivers and processes should be addressed from the beginning, their entry points will vary and priority setting and efficient implementation strategies will be needed at the international, national and sub-national level.

Objectives

As an initial step to the implementation of a MRVS for Guyana, a road map for the development of a MRV system for REDD+ participation for Guyana was designed following a stakeholder participation session. The development of such a road map considered several aspects that have been elaborated in the facilitation process and for preparing Terms of Reference for developing an REDD+ MRV system:

1. Requirements for the MRV system:
 - The accepted principles and procedures of estimation and reporting of carbon emissions and removals at the national level should meet criteria specified by the IPCC Good Practice Guidelines and Guidance for reporting on the international level;
 - The particulars of the national REDD implementation strategy that have been selected, since different activities have different MRV implications;
2. Bridging the capacity gap through a detailed plan to establish sustained MRV capacities within the country:
 - Capacity gap assessment based on the state of the existing national forest monitoring technical capabilities and the requirements for the MRV system;
 - Develop a road map and foster its implementation through a sustained and efficient institutional framework including competence in measuring and monitoring at different levels, support of national policies and REDD+ actions, international reporting and verification, and linking MRV of actions and MRV of transactions.

The outcomes of the initiative, as outlined in the MRV capacity development roadmap, are as follows:

- The overall goal is a capacity development process to establish a sustained MRV for implementing REDD policies and results-based compensation for such activities in the

long-term as a contribution to Guyana's low carbon development pathway and support for the sustainable development of natural resources;

- The development of a national REDD+ MRV system uses a phased approach along a roadmap that specifies near-term priorities & long-term targets; builds upon existing capacities and data; and international requirements and national needs; and has the objective to support annual estimation; reporting and verification of forest-related carbon emissions and removals at the national level,
- The MRV system evolution is directly linked with REDD+ policy development and implementation and contains a systematic national monitoring, reporting and verification system and a sub-national program to support MRV for local REDD+ activities;
- A strong institutional base and the establishment and maintenance of partnership and cooperation at all levels as enabling framework.

Seven specific areas were identified where activities are recommended for the first phase and have commenced:

- Develop and implement a national mechanism and institutional framework
- Implement a comprehensive forest area change assessment for historical periods
- Build carbon stock measurement and monitoring capacities
- Develop MRV for a set of sub-national REDD+ demonstration activities
- Engagement with the international community
- Sustain an internal and national communication mechanisms
- Conduct and support research on key issues

Progress to Date

In March 2011, a revised Joint Concept Note (JCN) under the Guyana/Norway Agreement was issued, and replaces the JCN of 2009. The revised JCN updated on progress in key areas of work including on the MRVS. REDD+ Interim Indicators and reporting requirements, as had been outlined in the 2009 JCN, were maintained with some amount of refinement, drawing mainly on results from the first year assessment. One notable adjustment, as reflected in the revised JCN, is the revision of the reporting period for the second year assessment to cover October 1, 2010 to December 31, 2011. This was done for more effective monitoring, using remote sensing.

In 2010, the first annual assessment was completed and includes historic assessment of forest area assessment and change monitoring by different drivers and activities causing deforestation. Further, reporting was also completed on the agreed REDD+ Interim Indicators as set out in the JCN and includes the establishment of several benchmark levels for the various REDD+ Interim Indicators that will be used as the basis for future reporting references. This assessment concluded on areas such as forest/non forest cover for four time periods, including the annual assessment period ending September 2010. The completed assessment was conducted by a consultant, and integrated key capacity building aspects as part of the process of building institutional capability, for the conducting similar work in the future. The Interim Measures Report which summarizes the approach, method, and results for the historic and annual assessment by drivers, was subject to independent accuracy assessment and independent third party verification. In early 2011, these were both completed and were publicized and are available at:

http://www.forestry.gov.gy/Downloads/Guyana_MRVS_Interim_Measures_Report_16_March_2011.pdf ,

http://www.forestry.gov.gy/Downloads/Accuracy_Assessment_Report_MRVS_March_2011.pdf , and <http://www.lcds.gov.gy/documents.html> .

Among the main results of the Interim Measures Report, Accuracy Assessment and Independent Verification, several recommendations were tabled for incorporation in the second reporting period. These have been identified as priority actions for continuous development of the MRVS in upcoming reporting periods, beginning with the immediate next period.

National capacity building commenced during the execution of the first assessment period and will progressively build in the future assessment periods. This process has been identified to remain as a priority in follow up reporting periods.

Nature of remote sensing services required

The Guyana Forestry Commission requires the services of an experienced remote sensing consultant to undertake comprehensive, consistent and transparent assessment of forest area change for the period October 1, 2010 to December 31, 2011 using medium resolution data, including Landsat-type satellite data that meet the criteria of the IPCC Good Practice Guidelines for LULUCF. This assessment report is expected to satisfy continuous building and improvement of national MRVS capability along the MRVS Roadmap as well as to fulfill report requirements for REDD+ Interim indicators under the JCN. All MRV activities and estimates should follow the five IPCC reporting principles to be transparent, comparable, consistent, as accurate and complete as possible, and should reduce uncertainties, as far as national capabilities and capacities permit). It is further indicated that monitoring systems and their results will be open to independent review as agreed by the Conference of the Parties. Additionally, all recommendations made in the first assessment period are expected to be fully integrated in the assessment period reporting. The methods and approaches applied in the first assessment period are expected to form the basis of and framework for this assessment to allow for consistency and continuity in efforts.

The technical aspects of the project should follow the IPCC Good Practice Guidance. Consideration will be given to efficient and appropriate methodologies that provide high-quality results. Guyana has a pool of skill set in the area of GIS and Remote Sensing and the successful candidate will be expected to utilize these skills as far as practicable in the execution of the activities, to maximize local capacity-building and also to minimize costs, particularly for labor intensive tasks in which they can appropriately trained. A strong focus of the initiative is towards building on the capacity established in the first assessment period, in Guyana. As such, preference will be given to proposals that include elements of using and further developing remote sensing capability of the natural resources management agencies in Guyana and especially at the level of the Guyana Forestry Commission.

It is expected that the successful candidate will utilize as far as possible, existing data within Guyana. A Steering Committee as well as a Technical Sub Committee, have been appointed to coordinate activities under this initiative. The successful candidate will be expected to work with staff of the technical subcommittee as well as staff of the Guyana Forestry Commission. A comprehensive field inventory of above and below ground biomass has commenced in 2010, and this will link with the forest area assessment conducted under this initiative.

The activities that are required will include working with the national REDD MRV coordination mechanism, to consolidate existing data sets and assistance in the creation of a satellite data image archive. Additionally, forest degradation mapping and monitoring are expected to be integrated in an integral way, in the assessment. All results and processes will be subject to an independent accuracy assessments as well as independent verification, and reporting is required on mapping forest change process as well as the development of a framework for reporting on interim performance indicators.

Proponents are invited to provide indicative methodologies and rough budget estimates for all activities listed in the Terms of Reference below. The activities implemented under this project form part of a larger Road Map (See *Terms of Reference for Guyana's MRVS*, pages 17-21, available at <http://www.forestry.gov.gy/publications.html>) and work on remote sensing and GIS assessments will extend beyond the time of this contract. For follow up work on those aspects, future invitation for bids will be issued. Candidates with experience in Guyana, in monitoring tropical forest and for capacity building in developing countries will be given preference.

The successful candidate will be required to communicate regularly with the Guyana Forestry and may also need to make themselves available for further discussions and possible interview.

Tendering Organisation

Guyana Forestry Commission (GFC)

The GFC is a semi-autonomous organization formed in 1979 with a legal mandate to manage and control the utilization of the State Forest Estate. Its main role is to ensure the sustainable utilization of the State Forest Estate in keeping with sustainable forest management principles and guidelines. The GFC also has a development mandate to ensure that there is a balance among the pillars of social, economic and environmental development. The recently passed Forest Act 2009, by Parliament outlines these pillars and outlines key legislative requirements for the Commission work.

The GFC has, over the past 10 years, undergone rapid development in the implementation of sustainable forest management, legality, and environmental standards. It has also expanded its geographic scope to 26 field stations and a number of mobile stations on forest concessions and has a total staff complement of 320 employees. Of more recent, are the modern and dynamic forest legislation and suite of Forest Management policies, guidelines and practices that guide the operation of the Commission that have been developed, with many of these already successfully implemented. The GFC also has a strong community forest programme through which it extends implementation of sustainable forest management practices and overall development support, at the community level.

The Commission is the technical agency that has been mandated to lead the implementation of the Monitoring Reporting and Verification system as outlined in the Low Carbon Development Strategy and the Readiness Preparation Proposal under the Forest Carbon Partnership Facility. This work will be done under the strategic oversight of the Office of Climate Change and on technical aspects, with various land management agencies such as the Guyana Geology and Mines Commission and the Guyana Lands and Surveys Commission, with close collaboration with stakeholders and community members.

Terms of Reference

Overall objective

To conduct a comprehensive assessment of forest area change and an identification of areas affected by forest degradation for the period October 1, 2010 to December 31, 2011, including reporting on REDD+ Interim Indicators set out in the JCN, and build national capacities for estimating forest-related activity data using the IPCC GPG on LULUCF.

Specific areas of activity

1. Build Capacity and Partnerships

- Review of capacity built during the first round of assessment
- Collaborate with international and national partner(s) to assist in processing and interpretation of data and to further refine variables, used in geospatial analysis.
- Conduct capacity building sessions on processing and interpretation of data, and quality assurance. This is required to be done within the country and should aim to build synergies with other international efforts involved in building national MRV capacities (such as UN-REDD)
- Actively assist the GFC in QA/QC and accuracy assessment of the forest area change and forest degradation estimates
- Further develop approaches and capacities for forest degradation monitoring and refine reporting capability in this area.
- Develop capacities, working in collaboration with Winrock International (Consultant for Forest Carbon Stock Assessment and Monitoring – Bid 2 of the MRVS), in creating and updating national level look up tables for emission factors.

2. Consolidate and Availability of Archived and Existing data

- Provide an inventory of archived satellite data available for Guyana with focus on national coverage for assessment period, its costs and technical potentials and limitations.
- Compile a pre-processed satellite data archive for the assessment period to be delivered to the GFC
- Use and integrate ancillary data from Guyana agencies that help in the monitoring process (to be delivered by GFC)

3. Conduct Mapping and Assessment of Change in Forest Area

- Using satellite imagery (Landsat-type data), map deforestation (and reforestation) and identifying areas affected by forest degradation starting for the period October 1, 2010 to December 31, 2011.
- Identification of mapped forest change processes (i.e. activities causing forest loss) at second step
- Further develop framework to report on interim performance indicators, and capacity building for the implementation of the MRVS as required by the MoU and Joint Concept Note between the Government of Guyana and the Government of Norway (available at www.lcds.gov.gy)
- In collaboration with Winrock International, contribute to the creation of national level look-up tables on emission factors.
- Support work on demonstration project in sub national deforestation mapping for demonstration projects.

4. Conduct Accuracy Assessment of Forest Maps and Change Estimates

Outputs / Deliverables

- Support the development of a methodology for determining the extent and scale of forest degradation using existing high resolution datasets. Lead the integration of degradation with the Guyana MRVS.

Timeline for delivery: end of November 2011

- Assist with ordering of medium and high resolution imagery prior to undertaking the analysis and report on the consolidation process of existing data and establishment of data archive, and delivery of a digital database of archived satellite data and national spatial datasets to GFC that are used for the forest area change assessment, ensuring compatibility, inter operability of data, and common geo referencing for REDD+ MRV

Timeline for delivery: end of December 2011

- Conduct assessment of degradation (using high resolution imagery) caused by infrastructure, including mining sites focusing on the aerial extent of such changes.

Timeline for delivery: end of March 2012

- Implement an at least 2 weeks remote sensing training and capacity building workshop in Guyana with guidance from GFC, so that Guyanese can be actively involved in the processing and analysis of the 2010/11 remote sensing datasets. This must include at least 2-3 GFC key personnel who are directly involved in the remote sensing assessment, and 2-3 personnel from the University of Guyana.

Timeline for delivery: end of June 2012

- Processing and QA/QC of data and results, mapping and assessment (using methods consistent with the ones used for the previous year) of change in forests: (including the identification of areas undergoing forest degradation) and consistent and transparent national estimates of deforestation and reforestation. The deliverables includes a report, documentation of improvement processes, and all output data in digital format. The maps should be delivered in a compatible format (i.e. GEO TIFF), as well as in pdf format.

Timeline for delivery: end of March 2012

- Assessment and reporting on the identification of mapped forest change processes based on the remote sensing data analysis, and REDD+ Interim indicators.

Timeline for delivery: end of March 2012

- Conduct accuracy assessment of forest maps and change, and degradation estimates including results of REDD+ Interim Indicators.

Timeline for delivery: end of April 2012

- Report describing a framework for continued building of national capacities to regularly conduct forest area change assessments by Guyana national agencies (including the assessment of software options) and for reporting on interim performance indicators as defined by Guyana.

Timeline for delivery: end of June 2012

- Implemented a 2nd capacity building workshops in Guyana on methods and procedures for conducting forest annual national forest monitoring including processing, data interpretation and analysis

Timeline for delivery: end of June 2012

The expected maximum budget for the completion of the above deliverables is US\$500,000. This budgeted sum must cover all aspects of the contract cost including consultancy cost, cost of field work, accuracy assessment, satellite images, and other related costs, but not including national level staff cost (GFC).

Note that the maximum consultancy and accuracy assessment budget for this contract, to fulfil all the above deliverables, is US\$360,000.

Application Process

If your organization/person is interested in bidding for this project, please do the following:

- Submit a 5-10 page project proposal to the Guyana Forestry Commission by 29th August, 2011 to:
Mr. James Singh
Commissioner of Forests
Guyana Forestry Commission
1 Water Street, Kingston, Georgetown, Guyana, South America.

Or by email to: Email address: Guyanaforestrycommission@yahoo.com

- Following the bidding and selection process, the chosen organization for the project will report to Guyana Forestry Commission on technical, financial and administrative matters.
- The client will have the option to extend the contract for an additional assessment period. Such optional extension will relate to the conducting of similar type of reporting on forest area assessment and change monitoring, and reporting on agreed REDD+ Interim Indicators.

The Proposal should specifically cover:

- Proposed methodology to undertake the services as specified in this TOR
- The fees/cost and business conditions associated with the implementation of the services as specified in this TOR. Daily consultancy and per diem rates should be stated.
- Timeline
- The team undertaking the work (if such is the case)
- An outline of how quality assurance activities will be undertaken for various activities of the terms of reference.
- An outline of the approach to capacity building with relevant Guyanese partners for every activity outlined in the terms of reference.
- In an appendix, the experience / resources you would bring to the project. Applicants are expected to provide named references with proven implementation and business experience in the terms of reference outlined. This appendix should cover your organization's previous work experience, as well as work relating to this area.
- Bids must be submitted in English and costs must be quoted in US dollars.

The Assessment Criteria for the Project are:

- Technical strength and credibility of proposal in meeting required international guidelines and standards, including quality assurance standards. (25%)
- Approach to capacity building involving relevant Guyanese Partners. (25%)
- Experience of the Provider in monitoring tropical deforestation in Guyana or similar country, working with various aspects of monitoring, reporting and verification of carbon stock and forest areas assessment, capacity building in developing countries and overall regional and international experience. (25%)
- Cost Considerations and efficiency of approach (25%)

Financial Proposal Format

Financial proposals/budget must be submitted in the format below:

| Budget Head | Cost (US\$) |
|--|--------------------|
| 1. Consultancy (including per diem and travel) | |
| 2. Equipment, Software and Satellite Images | |
| 3. Ground Truthing and Field Verification | |
| Total | |

DEADLINE: Proposals are to be sent no later than 29th August, 2011. Project commencement will follow shortly after this date.