



The way forward with Guyana's MRVS: Consolidating and expanding capacities for REDD+ monitoring and MRV

Report and Summary of a Workshop and Consultation held
24-25 March 2014

In Georgetown, Guyana



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Prepared by

Wageningen University, Center for Geoinformation:

Prof. Dr. Martin Herold

Erika Romijn

Guyana Forestry Commission:

Pradeepa Bholanath

With contributions from:

Kerry Ann Cort, Guyana Forestry Commission and Maarten van der Eynden,
Norwegian Ministry of Climate and Environment

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Acronyms

CMRV	Community measurement reporting and verification
COP	Conference of Parties
EF	Emission factor
GFC	Guyana Forestry Commission
IPCC	Intergovernmental Panel on Climate Change
LCDS	Low Carbon Development Strategy
MNRE	Ministry of Natural Resources and the Environment
MRV	measurement reporting and verification
MRVS	measurement reporting and verification system
NGO	Non-governmental organization
NRDDB	North Rupununi District Development Board
OCC	Office of Climate Change
REDD+	Reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forest and enhancement of forest carbon stocks in developing countries
SFM	sustainable forest management
SOP	standard operating procedure
UG	University of Guyana
UNFCCC	United Nations Framework Convention on Climate Change

1 Introduction

After 4 years of implementation of the MRVS Roadmap to support Guyana and its REDD+ programme of work; a series of consultation sessions were conducted during the week of 24-27 March 2014 in Georgetown, Guyana. The consultations with national and international partners and experts reviewed the progress achieved, lessons learned and discussed the foundations for continued engagement and next steps in further developing Guyana's forest monitoring capacities. Working Group Sessions on MRVS Roadmap took place on 24 and 25 March 2014 with focus:

1. on reviewing the progress made to date, reflecting on the need for ongoing and continuous activities and identifying gaps in implementation so far;
2. on having dialogue with national and international partners and experts on achievements, outcomes and lessons learned;
3. on developing next steps for the further development of Guyana's MRVS.

Through the realization of Roadmap phase 1, Guyana has made significant achievements in implementing a national level forest monitoring and MRV system. The Guyana-Norway Partnership has shown that some of the methods discussed at the international level are working, especially partnerships between developed and developing countries. Guyana has accomplished pioneering work and is able to measure and monitor both deforestation and forest degradation and is developing protocols specific to measuring and monitoring the individual drivers of forest change. Along with work at the national level, Guyana makes a significant contribution to the global debates on REDD+ and MRV systems. Even without concrete agreements at UNFCCC level regarding MRV systems and methodologies for implementation, Guyana has been making rapid progress in piloting methodologies and refining data collection techniques. This allows for sharing of lessons learnt; taking stock of those lessons for future plans as well as working closely with the international community and high level stakeholders.

The workshop brought together over 50 participants from different national key governmental agencies and institutions, national monitoring experts, international donor organizations, representatives from local and indigenous communities and national and international NGO's. The full list of participants is provided in Appendix A.

Appendix B provides the detailed agenda of the 2-day workshop. The first day included a series of opening remarks and presentations and discussions on progress on MRVS roadmap implementation, assessment of technical achievements and evolving requirements. The second day included technical sessions by national and international stakeholders involved in MRVS implementation with focus on the achievements and lessons learned and suggested next steps for a Roadmap phase 2. There were also three working group sessions and an open discussion on phase 2 Roadmap development, in which pillars for phase 2 Roadmap and action items were developed.

The outcomes of the consultation suggest the way forward with Guyana's MRV System and will help to inform the development of MRVS Roadmap phase 2.

2 Workshop presentations

Day 1: MRVS Roadmap Review Presentations

1. MRVS Implementation: Capacity Building & Data, MRVS Steering Committee, Staffing & Institutional Strengthening, Sustainability of Activities. Presenter: Nasheta Dewnath, GFC

Guyana's development and implementation of the Monitoring Reporting & Verification System for REDD+ was guided by the MRVS Roadmap (2009-2013). This Roadmap set the framework for the development of the MRVS and was developed through a multi stakeholder process in 2009. The MRVS Roadmap outlined progressive steps over a 3 year period to build towards implementation of a full MRVS and was designed based on a capacity building approach.

The MRVS steering committee has an overall coordinating function for implementation of the MRVS and comprises representation of the: Office of Climate Change, Guyana Forestry Commission, Guyana Lands & Surveys Commission, Guyana Geology & Mines Commission, Ministry of Amerindian Affairs, Environmental Protection Agency, University of Guyana, Forest Producers Association, Guyana Gold & Diamond Miners Association and the National Toshias' Council. This Steering Committee was convened at the initiation of activities for the development of Guyana's MRVS.

Institutional strengthening has been achieved by building upon existing capabilities within the GFC and REDD Secretariat. Key focus was on forest area change assessment and monitoring, and forest carbon stock measurement and monitoring. Especially in the start-up phase, there was significant support from international experts, including training activities, data collection and the implementation of the MRVS. Most of these activities can now be conducted by the GFC solely. GFC staff is involved in South-South capacity development and training community members. There is also engagement with the University of Guyana for collaboration and training. Capacity building continues to be integral to the successful implementation and sustainability of the MRV system.

2. The Government of Norway's International Climate and Forest Initiative – Forest monitoring and MRV for REDD+. Presenter: Maarten van der Eynden, Norwegian Ministry of Climate and Environment

The Government of Norway's International Climate and Forest Initiative supports REDD+ implementation in Guyana through a results-based partnership. Guyana's low deforestation rate and high forest cover (85%) and the strong political will to work towards a low carbon development strategy make Guyana an interesting and important pilot country. Results-based support is based on measured and reported deforestation and forest degradation and is subject to independent verification (MRV). Norway supports MRV in a number of countries, and several actors have highlighted Guyana as one of the countries where MRV has progressed the most.

3. Progress in implementation of Forest Area Change Assessment & Monitoring. Presenter: Kerry Anne Cort, GFC

Full Standard Operating Procedures (SOP) documentation has been written for the entire process to perform forest area change assessment in Guyana. This includes Remote Sensing image processing and analysis and mapping change using GIS. A historical assessment has been performed for the period 1990-2009. Based on the 2009 benchmark map, 3 annual assessments have been performed between Oct 2009-Sept 2010, Oct 2010-Dec 2011, Jan 2012-Dec 2012. The fourth assessment will cover 2013. Over the years, image resolution increased from 30 m (Landsat) to 5 m (RapidEye). Main drivers of deforestation detected include mining, infrastructure, agriculture conversion and fire. Main drivers of forest degradation include mining, infrastructure, fire, forest harvest and shifting agriculture.

4. Progress in implementation of Forest Carbon Stock Assessment & Monitoring. Presenter: Carey Bhojedat, GFC

Forest stratification, based on “high/medium/low potential for change” resulted in three sampling phases, which were sub-divided into “more accessible” and “less accessible” areas. Field data collection, following a SOP, included:

- Destructive sampling of trees (for allometric equation)
- Biomass Plots establishment (Emission Factor for deforestation)
- Logging plots (Emission Factor for forest degradation)
- Re-growth plots

Using the appropriate allometric equation, emission factors were developed for each deforestation and forest degradation driver for each stratum. Sampling phase one has been completed, measurements for phase two (medium potential for change) are now being conducted.

5. Reporting and Verification under Guyana’s MRVS. Updates on the monitoring, reporting and verification system (MRVS). Presenter: Jagdesh Singh, GFC

There are two sets of indicators to measure progress and achievements of REDD+ and LCDS efforts:

- Indicators of enabling activities
- REDD-plus Performance Indicators
 - Gross deforestation - *IPCC: Activity data on change in forest land*
 - Degradation - *IPCC: Changes in carbon stocks in forests remaining as forests*
 - Including emissions resulting from anthropogenic forest fires; *IPCC: Emissions from biomass burning*
 - Carbon removal - *IPCC: Activity data on change to forest land & changes in carbon stocks in forests remaining as forests*

Changes in forest area and forest carbon stocks for all these activities are measured and reported in the MRVS Interim Measures Reports. The MRVS Interim Measures Reports are subject to verification at two levels; an accuracy assessment and an independent third party verification. The scope of the accuracy assessment is for a third party not involved in conducting the change mapping to undertake an assessment of deforestation, forest degradation and forest area change estimates.

More specifically, the accuracy assessment assigns confidence limits to forest area estimates. The independent third party verification involves desk review, field audit, interviewing staff and stakeholders and further follow ups. Guyana's public release of the MRVS report enables independent verification by an auditor. Independent verification for Norway is done by a third party.

6. Progress in implementation of MRVS Roadmap Remaining Gaps and Capacity Needs.
Presenter: Pradeepa Bholanath, GFC

Remaining gaps from phase 1:

- Definition of Forest Degradation
- Further Development of Reference Level
- Uncertainty Assessment
- Exploring further drivers of forest degradation
- Accuracy assessment of forest area change
- IPCC Reporting
- Further development of SOP – tolerance levels, relevance of error, etc.
- Expanding capacities – balance development and operationalizing system

Continuous activities:

- Forest Cover Monitoring
- Forest Carbon Monitoring – Phase 3
- Verification
- Accuracy Assessment
- Community MRV (sub national level MRV activities)
- Reference level
- Stakeholder Engagement
- Engagement with UG

7. Forest monitoring capacity development for REDD+ in Guyana: Moving to phase 2 - priorities and next steps. Presenter: Martin Herold, Wageningen University

Important areas for phase 2:

- Building upon successful phase 1:
 - Complete objectives & fill remaining gaps from phase 1
 - Revise and amend to evolving international requirements (UNFCCC)
 - Build national forest/land monitoring as policy tool and for multi-sector engagement
- Need to develop a phase 2 plan: Roadmap for phase 2
- Willingness of multi-sector partners to engage

Day 2: Presentations by national and international stakeholders involved in MRVS implementation

1. Guyana MRVS Achievements & Opportunities. Presenter: Pete Watt, Indufor

Phase 1 achievements:

- Operational MRV, wall-to-wall mapping, highly accurate, repeatable and transparent and compliant with Approach 3
- Development of monitoring methods for mapping degradation and sustainable forest management / conservation
- Development of accuracy assessment methods for high resolution imagery
- Improved understanding of the dynamics and significance of forest change drivers

MRV next steps:

- Integrate sustainable forest management / conservation and afforestation and reforestation
- Classifying IPCC categories – Non-forest
- IPCC reporting
- Further discussion around appropriate levels of monitoring and reference levels
- Discussion around expectations for accuracy assessments

2. Guyana's REDD+ MRVS: Achievements and Challenges. Presenter: Felipe Casarim, Winrock International

Phase 1 achievements:

- Nation-wide system compliant with Approach 3; Tier2/3
- Following the principles of Good Practice (IPCC)

Next steps:

- Emphasize major sources of emissions in Guyana
- Need for forest degradation definition
- Operationalize monitoring and measuring of shifting cultivation
- Less frequent remote sensing monitoring (every 2 years)
- Transition towards time course emissions estimate
- Additional capacity building (data analysis, results interpretation, uncertainty estimation: Monte Carlo)

3. Guyana's Monitoring, Reporting and Verification System: Achievements, Lessons & Possible Next Steps. Presenter: David Singh, Conservation International

Some key lessons for decision makers:

- In order to ensure sustainability, public participation is critical and must be taken into account when supporting MRV
- While efforts are taken to meet the investor's milestones, capacity building and other medium to long term REDD+ action should be maintained

- Means to build the institutional capacity in integrated natural resource management and to improve forest and ecosystem governance
 - University and technical institutions should be involved in long term sustainable capacity building
4. CMRV for the WaiWai Kanashen COCA. Charles Hutchinson, World Wildlife Fund Guianas

Lessons learnt from building capacity to implement CMRV with the WAI WAI Kanashen Community:

- Partner to create synergies
- Respond to the community's lead
- Do not underestimate the community's capacity

3 Summary of discussions

3.1 Maintaining the MRVS and broadening the scope of monitoring

There is no other country that has annual reporting of deforestation and forest degradation and Guyana should be proud of this. Guyana should also be proud of that fact that the team that started the work in 2009 on the MRVS has been sustained to date.

Guyana has an extremely high rate of migration so it is irrational to expect a zero turn over. However, there is a strong political commitment to MRVS. MRVS is derived from policy but it is mostly a technical process. The MRVS has been built upon existing resources and was integrated into the existing GFC framework. When work on REDD+ initially started, the GFC accepted the challenges in addition to the routine work of the GFC such as monitoring and enforcement and ensuring compliance by stakeholders with guidelines of SFM. The MRVS and REDD+ broadened the scope and depth of the work of the GFC.

Continuous and timely financial resources are an important aspect. There was a change in the Government of Norway. The new government has extended Norway's International Climate and Forest Initiative (NICFI), which supports the development of the REDD+ international agenda and architecture until 2020. The REDD+ agenda remains stable and Norway's commitment will be maintained but the specificities still have to be discussed, including all bilateral partnerships. EU FLEGT is also seen as a REDD+ enabler, in the way it is approached (through bilateral works), and enforcing codes of practices.

Since the beginning there has been cooperation with the same dedicated experts and consultants who helped in building capacities. There are different ways of contextualising the MRVS approach and support from NGO's and consultants lead to forward thinking in terms of working towards achievements for the next years.

It is important to take note of the opportunities and lessons learned in order to involve other stakeholders and to catalyse development from this programme. It was recommended that the MRVS should continue to be mainstreamed in other departments of the GFC, and other land use and land management agencies, along with policy guidelines to be implemented. Good capacities are already available. Apart from MRV which is done as part of Guyana's REDD+ readiness efforts, and which also is a part of the reporting framework under the bilateral cooperation agreement on forests between the Governments of Guyana and Norway, the monitoring scope may be broadened to also use relevant data, methods and results generated to engage with other important sectors.

3.2 Improving capacities for CMRV and integrating CMRV into the national MRVS

Two pilot projects are being implemented to work with CMRV; one with 16 communities of the NRDDDB, funded by NORAD and the other working with the WaiWais in Kanashen, funded by WWF. These two pilot projects seek to create a replicable model that can be used at different community levels and remain in close synergy with the national MRVS. WWF is interested in aiding in capacity development in the Shell Beach area and other indigenous communities who are interested in CMRV and is able to provide assistance. CMRV gave the NRDDDB communities the opportunity to gain knowledge on carbon stocks and other resources of their forests and the value of these resources under a forest carbon financing mechanism. In order to apply CMRV in other communities, more financial resources are needed for institutional strengthening and to fund key institutions like the National Tshaos' Council. It is hoped that standard operating procedures (SOPs) and manuals will be produced which can be used by CMRV along with the national MRV.

It is important to learn from communities since each community may have differences in management approaches and modalities. CMRV needs to be a win-win situation; linking it to national MRVS would require a concerted effort. Local people are part of the solution which influences the expectations on the policy and monitoring aspects, etc. Nationally generated data can be useful at the community level and vice versa.

Information such as the extent of the forests, the percentage of titled Amerindian lands, whether indigenous land rights are considered for reclamation of lands and how land allocation is managed should be aspects considered in REDD+ and some areas in the MRVS. Agreements have been signed by the Government of Guyana to have 98 titled communities and 77 demarcations advanced to date as part of the Land Titling process. Land right is being addressed; however, some people seek to obtain territorial rights which are not stated in any of the Acts. Presently there are 13 communities to be titled and some others that have been marked for area extensions.

3.3 Technical issues for the MRVS

A study that was conducted in a deforested, mined-out area in Mahdia, showed that the mined-out soils have the potential to sequester carbon. Soil emissions are included in the MRVS. However the fate of the carbon after mining is not yet determined. It is not certain whether the carbon is emitted or washed downstream when overburden is removed. The amount of potential soil removals is also an area that needs to be ascertained. More studies need to be done to understand the soil carbon emissions and removals and dynamics within mined-out areas. Work on mining reclamation is being addressed at the level of the MNRE. As this work advances to a point of deriving main results, it could be implemented in the MRVS.

Guyana is at a stage where the current reference level can be revised from those that were used in 2009/2010 to inform the initial drafting of the Guyana Norway Bilateral agreement. The current reference level was part of the agreement with Norway at a time when national data on deforestation were not readily available at the initial stage of the MRVS. However, it could be revised

since better data on forest change and drivers of deforestation are now available along with better knowledge and understanding of the MRVS.

The accuracy assessment of forest area change for year one and two showed the same accuracies of 97%. In both cases the accuracy assessment was carried out on the overall final change product. For year one 30 m resolution (Landsat) data were used and for year 2 a combination of 30m (Landsat) and 5m (Rapideye) resolution was used to create the maps. The minimum mapping unit was 1 hectare.

3.4 Working group discussions

On the second day of the workshop the participants discussed issues and priorities for phase two in three different working groups:

1. From Phase 1 – Synthesis and priorities for phase 2 (technical issues)

Major progress has been reported in Guyana's capacities for REDD+ MRV and understanding of forest changes since the development and implementation of Roadmap phase 1. Detailed information on the areas of progress can be found in the independent evaluation report of NICFI on support to MRV in various non-Annex I countries, including Guyana (<http://www.norad.no/en/tools-and-publications/publications/evaluations/publication?key=406476>). However, there are a few areas for additional work from phase 1 and evolving requirements (local, national, and international). This group discussed the key technical issues to be tackled in phase 2. A summary of the items discussed and the working group table can be found in Appendix C.

During the presentation of the working group outcomes, a discussion point was raised on presenting Guyana's MRVS at international fora. For this purpose, a side event is planned during the UNFCCC COP20 in December 2014 in collaboration with Norway and the OCC. The COP will be targeted as there will be high level representatives attending from various countries, including Guyana's Head of State.

Another discussion focused on the ownership and distribution of benefits related to the carbon in Guyana's forests. The approach suggested to map and quantify forest areas and carbon stocks and changes and to use this to inform ways in which benefits can be shared among the owners of land. Under the FCPF, a benefit mechanism plan will be formulated which will be led at the level of the OCC.

Data sharing is an area that can be further advanced following necessary discussions at national and community levels. Many other countries are developing web-portals, which is a good example of how data and results can be shared. The results emerging from the MRVS in Guyana are available to all local relevant bodies, with base data available at relevant intra and inter agency levels within the natural resources sector. There is a data sharing mechanism at MNRE, where all MRV data feed into. Relevant data may be made available at the international level provided that this is done through an appropriate mechanism/protocol. Discussions need to take place on the framework within which this may be considered and whether it may be within REDD+ or another initiative to inform next steps in

the area of data sharing. In the context of data sharing, in the longer term, national biodiversity and freshwater tracking information may be other possible data elements that can be disseminated to communities to aid in managing resources at that level, and to land owners and managers to facilitate effective land management practices. Discussions on co-benefits are ongoing with many parties, where water and biodiversity may be explored.

2. Multi-sector governmental engagement in national forest and land monitoring (horizontal coordination)

Drivers and forest changes relate to multiple sectors (mining, agriculture, infrastructure, and environment). Data and information can serve as a means of engagement, which goes beyond the mandate of the national MRV steering committee. This group discussed the way forward from REDD+ to implementing the Low Carbon Development Strategy (LCDS) and towards a Green Economy. Strategic assessment of policies within sectors would help to determine what needs to be done to help link these policies with the LCDS. Communities can demonstrate to the world how they manage their resources and this can help at the national policy level. The main question to be answered was: How can improved national forest monitoring support stimulating and achieving REDD+ objectives in other sectors? A summary of the items discussed and working group tables can be found in Appendix D.

3. Integration of local and national forest monitoring for REDD+ MRV (vertical coordination)

There is progress at both the national and local level, but there is still the need for integration and more joint activities. This group discussed what needs to be done in terms of capacity development, institutional arrangements and on resolving technical issues to better link local and national monitoring. Key issues that need to be tackled in phase 2 were summarized. It was recommended that the key agency which should coordinate these activities and take the lead on all information, data sharing and policies is the Ministry of Natural Resources and the Environment. A summary of the items discussed and the working group table can be found in Appendix E.

A photo impression of the working groups and of a field trip to the Charabaru Forest Site, where the drivers of forest change and forest measurement and harvest activities were observed, is included in Appendix F.

Appendix A Participants list

	Names	Organization
1.	Gavin Agard	Ministry of Natural Resources & the Environment (MNRE)
2.	Naikoa Aguilar Amuchostegin	World Wildlife Fund, Guyana (WWF)
3.	Angela Alleyne	Food & Agriculture Organisation, Guyana (FAO)
4.	Bibi Nafeeza Amin	Guyana Forestry Commission (GFC)
5.	Vanessa Benn	GFC Board/ Iwokrama
6.	Curtis Bernard	Conservation International, Guyana (CI)
7.	Carey Bhojedat	Guyana Forestry Commission (GFC)
8.	Pradeepa Bholanath	Guyana Forestry Commission (GFC)
9.	Andrew Bishop	Office of Climate Change (OCC)
10.	Janice Bollers	Guyana Geology & Mines Commission (GGMC)
11.	Felipe M Casarim	Winrock International
12.	Chaplin Chan	Indufor
13.	Kerry Anne Cort	Guyana Forestry Commission (GFC)
14.	Nasheta Dewnath	Guyana Forestry Commission (GFC)
15.	Maarten van der Eynden	Government of Norway
16.	Joel Fredericks	National Toshias' Council (NTC)
17.	Patricia Fredericks	World Wildlife Fund, Guyana (WWF)
18.	Alana Foo	Guyana Lands & Surveys Commission (GL&SC)
19.	Laura George	Amerindian People's Association (APA)
20.	Edward Goberdhan	Guyana Forestry Commission (GFC)
21.	Jamie Hall	Guyana Forestry Commission (GFC)
22.	Martin Herold	Wageningen University
23.	Gregory Hodge	University of Guyana
24.	Charles Hutchinson	World Wildlife Fund, Guyana (WWF)
25.	Derrick John	National Toshias' Council (NTC)
26.	Colin Klautky	Guyanese Organisation of Indigenous People (GOIP)
27.	Ivor Marslow	North Rupununi District Development Board (NRDDB)
28.	Michael McGarrell	Amerindian People's Association (APA)
29.	Naseem A Nasir	Guyana Lands & Surveys Commission (GL&SC)
30.	Maria Paul	Guyana Forestry Commission (GFC)
31.	Haimwant Persaud	Ministry of Natural Resources & the Environment (MNRE)
32.	Kemraj Persaud	Environmental Protection Agency (EPA)

33.	Nalissa Persaud	Environmental Protection Agency (EPA)
34.	Peter Persaud	The Amerindian Action Movement Of Guyana (TAAMOG)
35.	Jeff Pickering	Indufor
36.	Vasques Ramdas	Guyana Gold & Diamond Miners Association (GGDMA)
37.	Erika Romijn	Wageningen University
38.	Chivanna Singh	Guyana Forestry Commission (GFC)
39.	David Singh	Conservation International, Guyana (CI)
40.	Donald Singh	Guyana Geology & Mines Commission (GGMC)
41.	Jagdesb Singh	Guyana Forestry Commission (GFC)
42.	James Singh	Guyana Forestry Commission (GFC)
43.	Towana Smartt	Guyana Forestry Commission (GFC)
44.	Chandroudie Sookdeo	Guyana Forestry Commission (GFC)
45.	Colin Sparman	Guyana Gold & Diamond Miners Association (GGDMA)
46.	Hansrajie Sukhdeo	Guyana Forestry Commission (GFC)
47.	Basantie Sukhu	Guyana Forestry Commission (GFC)
48.	Raquel Thomas	Iwokrama
49.	Pete Watt	Indufor
50.	Michael Williams	North Rupununi District Development Board (NRDDB)

Appendix B Workshop agenda

Day 1 - Monday, 24th March, 2014, GFC's Conference Room, Georgetown

Session	Details	Duration
Monday, 24. March 2014		
Invitees: National Stakeholders (Registration begins at 1:30pm)		
Opening Remarks	Pradeepa Bholanath, Head, Planning & Development Division, GFC James Singh, Commissioner of Forests, GFC Martin Herold, Wageningen University Maarten van der Eynden, Government of Norway	2 pm -5pm
Technical Sessions		
Progress in MRVS implementation	<ol style="list-style-type: none"> 1. Presentation on MRVS Implementation (Capacity Building & Data post 2013, MRVS Steering Committee, staffing & institutional strengthening, sustainability of activities) (Nasheta Dewnath, GFC) 2. Experience of working with developing Countries in MRVS – Approaches taken, Expectations, Lessons Learned and Progress to date (Maarten van der Eynden, GoN) 	
Discussions		
Assessment of technical achievements	<ol style="list-style-type: none"> 1. Progress in implementation of Forest Area Change Assessment & Monitoring (Kerry Anne Cort, GFC) 2. Progress in implementation of Forest Carbon Stock Assessment & Monitoring (Carey Bhojedat, GFC) 3. Presentation on Reporting & Verification currently undertaken (GFC) (Jagdesch Singh, GFC) 	
Discussions		
Progress on MRVS Roadmap and evolving requirements	<ol style="list-style-type: none"> 1. Presentation on Progress in Implementation of MRVS Roadmap incl. remaining gaps and capacity needs (Pradeepa Bholanath, GFC) 2. Background on MRVS roadmap and future needs for MRVS – International Perspective (Prof. Martin Herold, Wageningen University) 	
Close of Day 1		

Day 2 - Tuesday, 25th March, 2014, GFC's Conference Room, Georgetown

Session	Details	Duration
Tuesday, 25 March 2014		
Invitees: National And International Stakeholders		
Opening Remarks	Opening Review of day 1 achievements	9 am -1 pm
Technical Sessions		
Progress in MRVS implementation	Presentations by national and international stakeholder involved in MRVS implementation: <ul style="list-style-type: none"> • Achievements and lessons learned • Suggested next steps for a roadmap phase 2 Indufor, Winrock International, Conservation International, WWF.	
	Discussions	
Working Group Sessions (Facilitator: Prof. Herold)	Group 1 – From Phase 1 Synthesis And Priorities For Phase 2 Group 2 – Multi-Sector Governmental Engagement In National Forest And Land Monitoring Group 3 – Integration Of Local And National Forest Monitoring for REDD+	
Lunch 1 pm – 2 pm		
Feedback from group discussions	Presentations of group discussions Discussions	2 pm-5pm
Open discussions on phase 2 roadmap development	Summarize key requirements, develop pillars of phase 2 roadmap and actions items Discussions	
Closing of workshop		

Appendix C Summary of discussion in Working Group 1: From Phase 1 – Synthesis and priorities for phase 2

Participants list

1. Naikoa Aguilar-Amuchastegui - WWF Global Forest and Climate Program
2. Pradeepa Bholanath - GFC (Chairperson)
3. Felipe Casarim - Winrock International 3. Chaplin Chan - Indufor
4. Kerry Anne Cort - GFC
5. Maria Paul - GFC
6. Hansrajie Sukhdeo - GFC
7. Pete Watt - Indufor

Main areas of progress

- Strength and capacity
- Practical experience
- GFC internal confidence
- Wall to wall mapping
- First year mapping assistance (from Indufor), second year mapping done by GFC
- Quality data
- Accuracy assessment operational success at first trial

Remaining Areas from phase 1 to be further advanced

- Still room for improving capacity – analysis and reporting of data
- Emission factors for forest degradation further investigated
- Forest cover map
- Define degradation – is it relevant to mapping Guyana?
- Improve communications between different Commissions (in particular mining)
- Measure carbon (which will also find out what data is missing)
- Overkill mapping (for degradation)?
- Big picture needs to be relevant to all parties involved at all levels of communities
- Working with universities to sustain the overall process and improve overall MRV process
- Reporting format for compliancy – advisors are not involved in the reporting stage
- Trying new technologies such as LiDAR, Guyana is a good example to apply new tech. trials
- REDD community to showcase Guyana as a case study
- Definition of degradation, high importance, conducted by GFC, definition that will guide following steps

Key technical issues to be tackled in phase 2

- Significant improvements after 2009 for data gathering and knowledge of forest carbon (associating with actual forest)
- Soil carbon emissions (mining) – more work needs to be done here
- Assess common mining practices and associated carbon impacts
- Enhance preliminary data?
 - Define what is degradation
 - Provide ancillary data for detailed analysis in various fields (e.g. identifying areas of shifting cultivation)

- Realisation of deforestation and increase awareness of its effects and changes
- Identify new drivers to describe land change
- Understanding that mining is a (the?) major driver of deforestation
- Coordination from CMRV to NMRV, increase level of communication
 - Publicise results to increase awareness
- Increase in spatial and temporal resolution is capturing more data
- Update forest cover map will be useful
- Determining cost.... (to initialise all these concepts)

Key Issue	What	Who	Importance
Refining the measurement and reporting of forest degradation	<ul style="list-style-type: none"> • Developing a definition of forest degradation relevant to Guyana • Identify which drivers are significant and focus on main sources of emissions • Definition that will guide following steps by using existing data and reflect on the definition of forest • Looking at current and new drivers and exploring availability of data for drivers • Focus on main sources of emissions • How and what do we monitor to measure degradation 	GFC	High
Reference level	<ul style="list-style-type: none"> • Further development of a reference level • Development of RL projections taking into account future development • Link between communities (integrated systems) and alignment with CMRV as needed and where makes sense • Historic reference level and modelling for future projections • Re-evaluating payment basis for bi lateral agreements (e.g with updated data on forest carbon stocks, etc.) • Submitting proposal on RL to UNFCCC 	GFC , OCC & community stakeholders	High
Capacity building	<ul style="list-style-type: none"> • Areas of development, synthesis and stream lining reporting • Exploring forest change automation using 3 years of RapidEye • Overview of relevant statistical and data analysis required • Institutionalise MRV & REDD within academic institutes - MRV courses and materials • CMRV - standardising collection and processes to facilitate linkages to national MRV • Degradation mapping and monitoring 	GFC with local and international partners/advisors	High
Institutional capacity and framework	<ul style="list-style-type: none"> • Data sharing with community stakeholders and national land use management agencies • Defining products and protocols, intra and inter agency co-ordination 	GFC and MNRE and international partners/advisors	High
Reporting	<ul style="list-style-type: none"> • Full operationalising of MRV to adhere to IPCC standards • Reporting in accordance to IPCC standards • UNFCCC decision at cop20 speaks to biennial reporting, need to consider possible movement towards this, vis a vis requirements of bilateral agreements. Revision of MoU and removal of interim indicators 	GFC, OCC & advisors	High
Public dissemination and awareness at local level	<ul style="list-style-type: none"> • Develop and sustain communication system at urban and rural levels, with NGOs 	Government agencies, NGOs and	High

		stakeholders involved	
Verification	<ul style="list-style-type: none"> • Examine verification process with respect to information as already provided in the Accuracy Assessment • Develop a framework for verification to ensure efficient and practical execution including a practical schedule of frequency and depth of verification • Internal and external verification process defined and agreed by GON 	GFC and advisors & GON	High
CMRV	<ul style="list-style-type: none"> • Data sharing and co-ordination to be strengthened to allow robust and cohesive inputs (relevant at CMRV and national MRV levels) • Achieve buy in, to ensure relevance, added value of CMRV efforts - This will require co-ordination • Building institutional framework for CMRV adding value to NMRV and vice versa • Increase training and capacity building in required skills in field and data analysis 	GFC & community stakeholders (MoAA)	Medium/High
Research	<ul style="list-style-type: none"> • Evaluate new remote sensing technologies to improve estimates - i.e. new satellites and LiDAR, topographic datasets • Evaluate ways of mitigating mining impacts - better extraction processes, policy, monitoring and recording, compliance • Emission factors of soils - especially across extractive sectors • Improvement of forest cover map to improve land cover mapping to improve emission estimates • Calculate forest debris (stumps, logs) lagging emissions/decay rates • Evaluate reclamation options for extractive sectors • Evaluate shifting agriculture chrono-sequence to refine mapping and Emission Factors 	MNRE, GFC & international partners; Academic institutions/local and international	Medium/High
Uncertainty assessment	<ul style="list-style-type: none"> • Spatial aspects of change so as to improve uncertainty levels in rates of change • Uncertainty assessment on other types of errors as well as sampling errors (e.g. Monte Carlo) 	GFC & advisors and experts in MRV	Medium
Co Benefits including PES	<ul style="list-style-type: none"> • Exploration of biodiversity & fresh water • Reflecting on UNFCCC process 	GFC, MNRE (EPA, PAC) & community stakeholders	Medium

Dissemination of information and international awareness	<ul style="list-style-type: none"> • Looking at results with respect to alignment with GON and also with other international standards/FCPF & UNFCCC (e.g. decisions at COP 20) • Contribution to scientific publications, peer review journals and international seminars • Contribution to international guidance (e.g. GFOI methods and guidance documentation) 	OCC & MNRE, GFC & other agencies (including advisors)	Medium
Compliance monitoring	<ul style="list-style-type: none"> • Frequent change monitoring (6 month updates) using either airborne or satellite system • Support of compliance monitoring for land use & land allocation - mining, forestry and other changes 	GoG Ministries	Medium
Data	<ul style="list-style-type: none"> • Exploring data sharing of change results & datasets and accessibility at an international level 	GFC and MNRE	Low

Appendix D Summary of discussion in Working Group 2: Multi-sector governmental engagement in national forest and land monitoring

Participants list

1. Gavin Agard - MNRE
2. Bibi Nafeeza Amin - GFC
3. Curtis Bernard - CI Guyana
4. Alana Foo - GL&SC
5. Martin Herold - Wageningen University (Chairperson)
6. Gregory Hodge - University of Guyana
7. Naseem A. Nasir - GL&SC
10. Haimwant Persaud - MNRE
11. Nalissa Persaud - EPA
8. Vasquez Ramdas - GGDMA
9. Erika Romijn - Wageningen University
12. Jagdesh Singh - GFC
13. Basantie Sukhu- GFC

Introduction

- Benefits of national REDD+ forest monitoring as tool for others:
 - For example: Which miner deforests the most?
 - Use and sharing of available data is important
- Linking data to decisions: ways of integrating data into routine tasks of ALL GFC departments and other Ministries/Stakeholders
- Plan and manage the effects of deforestation in addition to mapping it

Main discussion points

- Drivers and forest changes relate to multiple sectors (mining, agriculture, infrastructure, environment)
- From REDD+ to implementing the Low Carbon Development Strategy and towards Green Economy
- Data and information as means of engagement – beyond the national MRV steering committee
- How can improved national forest monitoring support stimulating and achieving REDD+ objectives in other sectors?

Usefulness and key needs for forest monitoring data:

Ministry / sector	Usefulness and benefits from national forest monitoring	Needs, expectations and pathways to engage	
		REDD+ related	Co-benefits
Guyana Forestry Commission	<ul style="list-style-type: none"> • Use information generated by the MRV to inform forest zonation • To understand the carbon impact of the different drivers • Ensures sustainable forestry and land monitoring • The conservation of the natural biodiversity through protecting the ecosystem and keeping it at a constant level • More caution would be taken by people with clear understanding of the importance of monitoring the forest 	<ul style="list-style-type: none"> • Developing policies (strong influential) on the root cause of deforestation and degradation • Have appointed persons conduct regular checks and do monitoring practices in the forest • Engage people in informative workshops about the importance of the forest and land management • Develop capacity to PhD level (at least two persons) in order to reduce costs associated with MRVS thereby increasing possibility of sustainability 	<ul style="list-style-type: none"> • Skills should be shared with the University of Guyana (UG). Currently, the relevant skills (GIS, remote sensing, analysis, etc.) related to the MRVS are better at the GFC than they are at UG. Possible opportunity for one-year work study at the GFC as compulsory part of UG's Forestry programme • Data and results of the various analysis should be shared with relevant agencies (or be available publicly) in order to influence changes in decision making and management
Guyana Gold and Diamond Miners Association	<ul style="list-style-type: none"> • Information of mining related deforestation is important and useful • Useful information on the areas deforested and their extent/rate • Important that these data are available to understand which areas are most affected so they can be targeted for monitoring 	<ul style="list-style-type: none"> • Potential benefits from lowering forest impact by executing more stringent monitoring protocol and reclamation activities such as reforestation after mining 	<ul style="list-style-type: none"> • The information will serve as a tool/guide for our environmental officers to undertake monitoring activities • Identification of hotspots of degraded Mined-out areas to initiate Reforestation • The Mined-out soils can be used as a possible carbon pool to sequester carbon from the atmosphere by reforestation
EPA	<ul style="list-style-type: none"> • Potential to use as contributing baseline data • Identification of areas for reclamation • Data and information to support monitoring compliance and for enforcement purposes 	<ul style="list-style-type: none"> • Capacity building across all sectors to link forest monitoring to the Low Carbon Development Strategy (LCDS) • Environmental impact assessment of large projects such as mining and logging • Support decision making process of monitoring these projects (before and after analysis) 	<ul style="list-style-type: none"> • Identification of hotspots of environmental degradation, with respect to water quality and forest degradation • Forest monitoring could also be used to collect ecosystem information (e.g., jaguar sightings, water quality issues, etc.) in collaboration with the GFC, GGMC, GLSC and UG
Ministry of Natural Resources and Environment	<ul style="list-style-type: none"> • Use and analyse the deforestation data to understand where deforestation is happening, what caused it and who is 	<ul style="list-style-type: none"> • Support research and reclamation in mined out areas • Analysis of mining impact on forest vs 	<ul style="list-style-type: none"> • Water quality and water shed management; impacts of deforestation on this

Ministry / sector	Usefulness and benefits from national forest monitoring	Needs, expectations and pathways to engage	
		REDD+ related	Co-benefits
	<ul style="list-style-type: none"> responsible To understand trends in the data and model impact on other sectors in natural resources 	<ul style="list-style-type: none"> economic return 	<ul style="list-style-type: none"> Guide decision making
University of Guyana	<ul style="list-style-type: none"> Opportunities for research 	<ul style="list-style-type: none"> Research priorities, soil carbon impacts, and emphasis on training students and potential areas for re-vegetation Potential for ecosystem, disease vector and occurrence studies. 	<ul style="list-style-type: none"> Training and education to prioritize on government priorities
CI	<ul style="list-style-type: none"> Data are used for planning across sectors 	<ul style="list-style-type: none"> Supports engagement with the mining sector 	<ul style="list-style-type: none"> Support for the healthy and sustainable (low carbon) economy Transparency, data sharing to be developed and support planning and management done by the private sector and civil society Explore options for open source
Guyana Lands and Surveys Commission	<ul style="list-style-type: none"> Limitations to usefulness, because most focus is on agriculture Preparation and updating of the land use plan. Data on deforestation and related land use change should feed into this plan resulting in a dynamic plan 	<ul style="list-style-type: none"> A good and updated land use plan is a key enabling indicator for developing and implementing the LCDS 	<ul style="list-style-type: none"> Data sharing mechanism across Ministries and national spatial data infrastructure Building upon the existing data sharing mechanism for the national forest monitoring
Office of Climate Change	<ul style="list-style-type: none"> Supports the implementation of Guyana's Low Carbon Development Strategy Inform the execution of REDD+ projects at national and sub national level through the Guyana REDD+ Investment Fund 	<ul style="list-style-type: none"> Through the Multi Stakeholder Steering Committee of the LCDS inform activities aimed at furthering the implementation of the LCDS 	<ul style="list-style-type: none"> Support work that is being done at the level of Protected Areas
Protected Areas Commission	<ul style="list-style-type: none"> Directly relevant to monitoring for potential illegal activities in the protected areas 	<ul style="list-style-type: none"> Understanding of ecosystem vulnerabilities, pressures and loads 	<ul style="list-style-type: none"> Ecosystem studies in partnership with UG. Development of management plans for the protected areas
Guyana Geology and Mines Commission	<ul style="list-style-type: none"> Identification of geologic hazards and minimization of the impacts of mining activities on waterways, etc. Prioritization of sites for reclamation Reduction in land management issues and 	<ul style="list-style-type: none"> Habitat/forest restoration through reclamation of mined sites Improve methods of mining and prospecting through capacity building and knowledge and technology transfer thereby 	<ul style="list-style-type: none"> Linking of information between the MNRE agencies, other government agencies and NGOs Unrestricted information flow between MNRE agencies

Ministry / sector	Usefulness and benefits from national forest monitoring	Needs, expectations and pathways to engage	
		REDD+ related	Co-benefits
	<p>minimization of conflicts between uses/users (mining, logging, agriculture, etc.)</p> <ul style="list-style-type: none"> Enhanced monitoring to detect unlicensed occupancy and use of forest resources 	reducing deforestation and degradation	
Ministry of Amerindian Affairs	<ul style="list-style-type: none"> Inform programme of land titling to indigenous villages and planning of development projects (including implementation of Community Development Plans) at village level. 	<ul style="list-style-type: none"> Benefits of the community MRVS need to be realised and its usefulness justified. This can then serve as a model and be extended to other communities that opt in to the MRVS 	<ul style="list-style-type: none"> Ecosystem studies in partnership with UG
The National Toshias' Council	<ul style="list-style-type: none"> Support strategic and project planning at village level Inform the sustainable management of forests that are titled and managed by communities and villages 	<ul style="list-style-type: none"> Gateway for education related to REDD+ and MRVS 	<ul style="list-style-type: none"> Create framework for management of other forest goods and services across all Amerindian communities including as potential protected areas
Civil Defence commission	<ul style="list-style-type: none"> No significant direct benefit, but potential benefit from increased access to data 	<ul style="list-style-type: none"> Improved disaster risk management and planning for forest based communities and regions 	<ul style="list-style-type: none"> Future planning for long term strategy on risk management
Ministry of Health	<ul style="list-style-type: none"> No significant direct benefit, but potential benefit from increased access to data. Damage to the environment related to mining could have impact on incidence of malaria and other diseases 	<ul style="list-style-type: none"> Support to more effective community forestry and social development programmes at forest based community levels thereby support sustainable forest management 	<ul style="list-style-type: none"> Study of disease (mostly malaria) vectors in conjunction with UG

Key actions:

Key issue	What?	Who?	Importance (low, medium, high)
Communication and explanation of the national forest monitoring system to different governmental actors	<ul style="list-style-type: none"> Series of workshops, communication materials, video's, infomercials 	GFC, through MRV steering committee, OCC, MNRE and other key agencies	High
Use the MRV steering committee to discuss possibilities for an active multi-sector engagement	<ul style="list-style-type: none"> Define needs and targets (input from the policy side needed) Discuss the institutional framework for an active multi-sector engagement Define some priority activities 	MRVS Steering Committee, OCC, MNRE.	High
A need to assess REDD+ and LCDS policy priorities and implications on monitoring.	<ul style="list-style-type: none"> Strategic assessment of productive sectors and their role in REDD+ and LCDS 	Multi-sector/stakeholder (MSS) committee of the LCDS, office of climate change	High
Demonstration activity on how monitoring can support addressing the key drivers.	<ul style="list-style-type: none"> Activities to reduce carbon impact of mining and related monitoring To pilot the multi-sector engagement in monitoring Research activities Options for near-real time monitoring for high priority sites 	GGMC, GFC, EPA, MNRE	High
National spatial data infrastructure	<ul style="list-style-type: none"> To enable data access and sharing for the LCDS, beyond what is currently done for the MRVS To implement the SDI (policy, secretariat, staff, committee, etc.) Transparency and the use of open source Opportunities to integrate community MRV into the national forest monitoring system 	New committee / agency?	High
Capacity development in the GFC and other agencies contributing to the MRVS.	<ul style="list-style-type: none"> PhD scholarship for key GFC staff in order to build skills in the MRVS analysis activities. This would assist in the sustainability of the activities Analysis of capacity GGMC, GLSC, EPA, MNRE and UG in order to identify weak points in the institutions supporting the MRVS and resulting in a general and/or focussed solution 		Medium

Appendix E Summary of discussion in Working Group 3: Integration of local and national forest monitoring for REDD+ (MRV)

Participants list

1. Vanessa Benn - GFC Board/ Iwokrama
2. Carey Bhojedat - GFC
3. Nasheta Dewnath - GFC
4. Joel Fredericks - NTC
5. Laura George - APA
6. Derrick John - NTC
7. Colin Klautky - GOIP
8. Ivor Marslow - NRDDDB
9. Michael McGarrell - APA
10. Peter Persaud - TAAMOG
11. Jeff Pickering - Indufor
12. David Singh - CI (Chairperson)
13. Towana Smartt - GFC
14. Maria Sookdeo - GFC
15. Michael Williams - NRDDDB

Progress at both the national and local levels needs to be further strengthened and be in conformance with national priorities and requires more joint activities.

- Work on Community MRV initiated by communities of the North Rupununi District Development Board (NRDDDB), with Annai being chosen as the pilot site for implementation of CMRV activities. The primary partners in this project are the Global Canopy Programme (GCP) and Iwokrama International Centre for Rainforest Conservation and Development, with a Memorandum of Cooperation (MoC) established among these partners and the Guyana Forestry Commission.
- The intention of the Community MRV project is to build capacity for local communities in the North Rupununi region of Guyana to measure and report on key indicators and metrics such as forest carbon stocks and biodiversity in relation to important drivers of forest change (such as forestry, fires, mineral exploitation and infrastructure); to provide the communities with information that can help underpin their adaptive management processes and climate change adaptation strategies; to enable monitoring of the impacts of potential future REDD+ activities that might occur on community lands (if communities choose to opt-in to the LCDS), with particular regard to social and environmental safeguards; and to verify that such monitoring produces reliable information that can feed into the national MRVS within the framework of Guyana's LCDS and in accordance with IPCC guidelines
- Second CMRV project initiated in 2013, between Kanashen Community and the WWF. The WaiWai Kanashen Community Owned Conservation Area (COCA), which was targeted as the model site because of its critically important role as by far the largest indigenous territory in Guyana and the first to seek protected area status. This initiative will build on the crucial links between Guyana and Norway in support of Guyana's forests and the Government's Low Carbon Development Strategy which includes the world's only functioning national scale

REDD+ agreement and MRV System; captures lessons from and builds on the successful Norad-funded CMRV project of the Global Canopy Programme (GCP), the North Rupununi District Development Board (NRDDB) and Iwokrama;

- The CMRV will provide data required for the communities to meet conditions of FPIC to participate and receive benefits from REDD+. At the same time, it will serve as the monitoring system necessary to meet the conditions required of a protected area in the Guyana Protected Areas System. GFC and NRDDB are partners in this process.
- Both projects funded by Norad.
- These projects will serve as replicable models that can be used by other communities that may be interested in establishing CMRVs.
- Free Prior and Informed Consent (FPIC) fully implemented in both projects, with evidence of thorough community consultations and decision making by the respective communities, as well as official sign off in both cases. These processes have been fully documented.
- Documentation of lessons learnt by the CMRV project in Annai.
- CMRV will serve as important aspect for feeding information into national MRV System, as well as verifying results of findings reported at national level.]
- GFC partnered with the CMRV Projects and provides technical advice and guidance as well as capacity building support.

What needs to be done in terms of capacity development, institutional arrangements and on resolving technical issues to better link local and national monitoring?

Key Issue	What	Who	Importance
Sharing lessons learned	<ul style="list-style-type: none"> • Develop communication materials, emphasis on the proactive • Mid-term review forum • Feedback loop & Information exchanged to build national awareness 	MNRE lead with GFC/NGO/CBO	High
Develop SOP	<ul style="list-style-type: none"> • Standard Operating Procedures with general guidelines applicable elsewhere but also recognition of what is locally contextual • User friendly documentation for non-technical users 	GFC facilitates but involves NRDDDB, Iwokrama & GCP	Medium
Partnerships among agencies and organizations	<ul style="list-style-type: none"> • Encouragement of agency partnerships, not just communication • Needs an appropriate provision of resources • Active Government endorsement for Non-governmental efforts • In line with existing national policy 	OCC and MNRE	High
Institutional Strengthening	<ul style="list-style-type: none"> • Strengthening of NTC • NTC Secretariat • Capacity of Executive Members & Village leaders • Enabling regional networking • Role of GFC in regard to MRV • Results of the strategic assessment • Regular exchange mechanism between local and national monitoring to be established (MRV steering committee is not the suitable forum) 	NTC & MNRE and GFC	High
CBO power	<ul style="list-style-type: none"> • Enabled and facilitated to assist in building capacity • Pilot program with One CBO? 	CBO to request for capacity to a facilitating agency (GFC)	High
Social Indicators	<ul style="list-style-type: none"> • Use of CMRV framework to develop social indicators • Manual & Workshop for communities in early stages of CMRV on how to gauge progress using social indicators and to learn from experience of others 	NRDDDB & GFC	High

Appendix F Photo impressions

Workshop and working group sessions



Field Trip in Charabaru Forest Site

