Case Studies: Getting countries MRV-ready

Lessons from Mexico and Guyana

Summary

A robust REDD+ (Reducing Emissions from Deforestation and Forest Degradation) mechanism depends on a solid scientific basis, the participation of key stakeholders, and the political and institutional will to set up the processes necessary to quantify reductions in greenhouse gas (GHG) emissions from deforestation. In-country technical capacity is needed to monitor changes in forest cover, and forest degradation and associated GHG emissions over time. Transparently monitoring and Measuring, Reporting and Verifying (MRV) REDD+ is also important to instill confidence that REDD+ is achieving results.

In order to establish MRV systems whose results can be trusted, monitoring and MRV for REDD+ should integrate and coordinate field-based forest carbon inventories, remotely-sensed land-use change analyses and other datasets. For example, frameworks should be able to track changes to and from forest land in a spatially-explicit manner (IPCC Approach 3).

Local capacity is critical to the ability to develop monitoring and MRV systems. In many cases, effort will need to go into building that capacity.

Participatory processes not only enable capacity building, but can also increase the quality of the information used and collected. The processes involved and information produced in developing reference levels and MRV systems can contribute to capacity building and improve governance. For example, identifying the drivers of deforestation can help determine locally appropriate approaches to addressing deforestation and make the transformational changes necessary to achieve success in REDD+.

A number of efforts by developing countries at subnational and national levels are demonstrating that technically robust MRV is achievable and can demonstrate real GHG reductions. This paper highlights examples of Conservation International's work with local and regional partners in Mexico and Guyana. These efforts are paving the way for the development of REDD+ MRV systems that will accurately produce real and verifiable results. They also demonstrate the key role subnational efforts can play as well as some of the steps necessary to scale up these efforts to the national level.

Introduction

REDD+, a pay-for-performance mechanism, is designed to incentivize results. This requires the ability to accurately show how much deforestation and forest degradation, and resulting GHG emissions, have been avoided as well as the social and environmental benefits or positive impacts that such initiatives might have. This requires the capacity to accurately measure those changes.

Thus, countries need to put in place a system to accurately measure and monitor changes in carbon emissions due to forest loss in order to report emissions to the international community and to potential REDD+ investors. Confidence from the international community, donors and investors in REDD+ relies on the certainty that the mechanism is not creating hot air-emissions reductions that are not real. In particular if REDD+ credits are traded in markets, the success of REDD+ will depend on its capacity to produce real, additional and verifiable reductions of emissions from deforestation.

Providing information on non-carbon impacts is also important. In particular, there are ways in which systems for providing information on REDD+ safeguards should be integrated into MRV systems. This paper will not address those issues, but will focus on the carbon aspects of MRV. We will, however, address some of the ways in which MRV systems can include community participation, which empowers local people to better manage their forests.

Establishing MRV systems requires a great deal of technical expertise. For example, measuring carbon stocks or interpreting satellite imagery requires specialized techniques conducted by skilled professionals. Many countries and projects are already moving ahead

with high-caliber technical studies, building on existing skill sets and data while increasing their capacity. Some countries are also developing subnational systems. Experience gained at the local or regional level can contribute as these countries scale up to national systems. Indeed any successful MRV program must be implemented at the local, regional and national levels to build strong support from both governments and local community stakeholders who will be instrumental in REDD+'s long-term success.

Knowledge sharing between developing countries is an important source of capacity building and many countries have experience establishing MRV systems. Moreover, this experience demonstrates that reliable MRV systems are achievable and that the necessary technical knowledge exists to build MRV systems that meet rigorous standards.
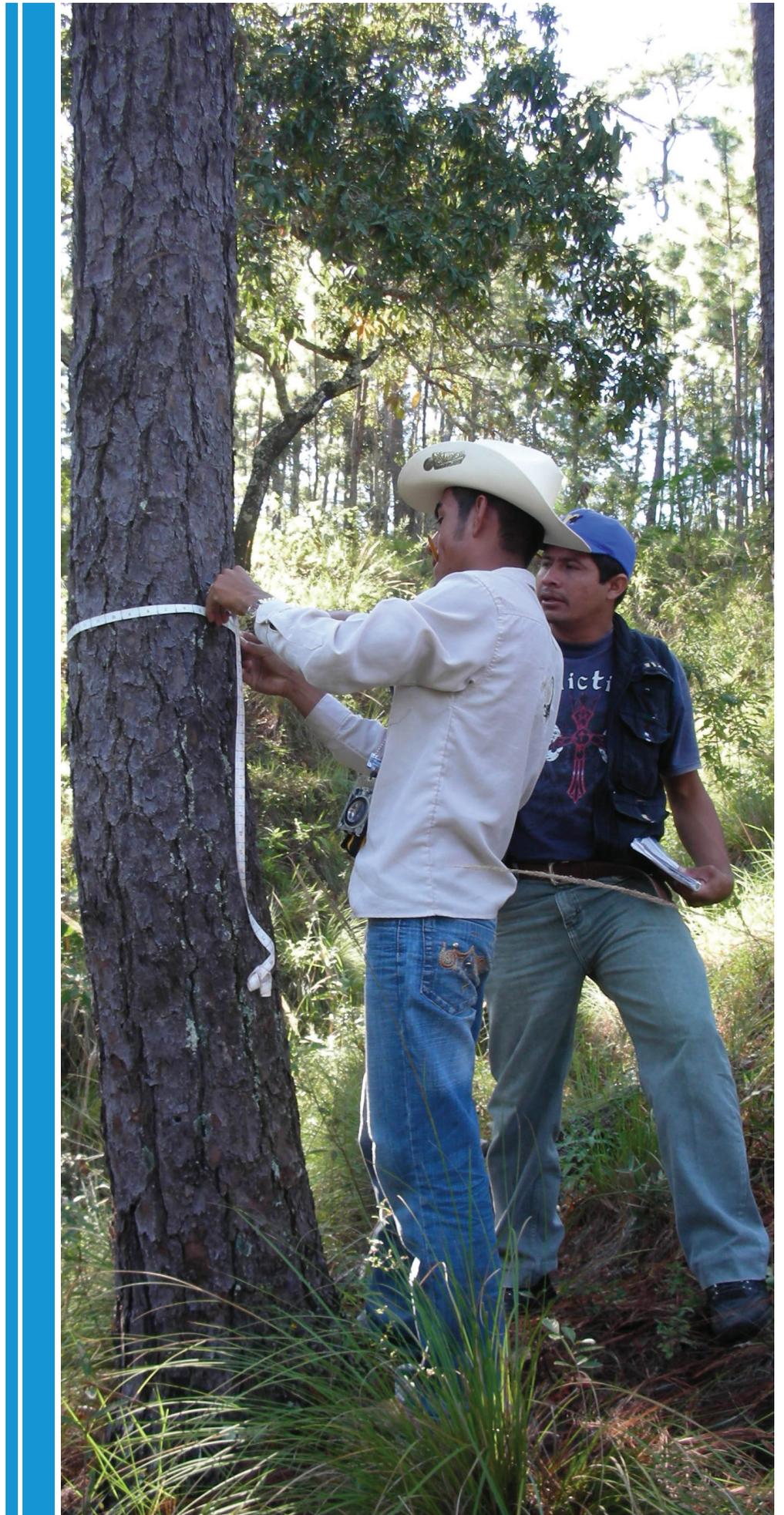
Case Studies:

Case Study 1: Chiapas, Mexico, a subnational pioneer experience

Mexico has a federal government that allows states to make their own laws. State governments, therefore, have a critical role to play in REDD+. In September 2011, the government of the state of Chiapas, in coordination with CI, the British Embassy in Mexico and local research institutions presented the state's Climate Change Action Program for Chiapas (PACCCH). PACCCH strengthened the state's climate change policy and legal instruments and put REDD+ at the forefront of the state's climate change mitigation plans. The Climate Change Action Program is unique because it was developed by local and national key stakeholders improving capacity and inter-institutional coordination.

Chiapas is important as one of Mexico's most biodiverse states and the main provider of hydroelectric power to Mexico. Hence, protecting forests in Chiapas is critical not only for the environment but also for the Mexican economy and human well-being.

Following the IPCC guidelines (between Tier 2 and Tier 3 of IPCC guidelines) resulted in a state-of-the-art GHG inventory and a spatial analysis of past and future deforestation and degradation that will pave the way for the government's actions on REDD+. In addition, the document includes a set of recommendations that informed a new climate change law recently passed by the Chiapas State Congress.

To achieve this groundbreaking success, CI established key alliances with local research institutions, such as Ecosur (El Colegio de la Frontera Sur) and COLPOS (Colegio de pos graduados), UNICACH (Universidad de Ciencias y Artes de Chiapas) rather than depend on international expertise. These local experts were included and invited because they could provide local experience and knowledge. National expertise was also readily available. While establishing the alliances and defining roles, responsibilities and legal agreements was challenging, it proved to be a wise decision: The state government and key actors immediately adopted, supported and took ownership of the initiative.

Greenhouse gas inventories began in January 2010 after two months of discussions and partnership building. The availability of local expertise and institutional support enabled the greenhouse gas inventory to be completed in as little as seven months, but would likely have taken much longer in the absence of existing local expertise. The inventory indicated that nearly two-thirds of the emissions in Chiapas, mostly CO_2 and methane, was produced by land-use and land use change with 57 percent or 16,182,08 Gg of CO_2e emissions from deforestation and forest degradation; 19 percent from agriculture and cattle; 15 percent from energy and transportation; and 8 percent from solid waste and waste water. REDD+ will therefore be crucial to Chiapas' success in reducing its emissions.

In order to measure emissions from deforested land, CI and its research collaborators used existing data on the biomass content of different types of forests. Researchers recorded species richness and measured biomass in sample plots of different forest ecosystems which was used to estimate above-ground and soil carbon. This data was used to produce reliable estimates of greenhouse gas emissions.

In addition, the study estimated change in forest cover from 1990 to 2010 based on a 20-year dataset collected by Paz, et al (COLPOS). The expertise of COLPOS and ECOSUR experts was instrumental in translating the satellite (LandSat) images into forest cover change data. Using different categories of forest cover, the team was not only able to calculate deforestation rates but also forest degradation every five years from 1990 to 2005 and every two years since 2005. They then computed the associated carbon emissions.

This work informed other components of the team's technical activities, such as the development of a GIS-based
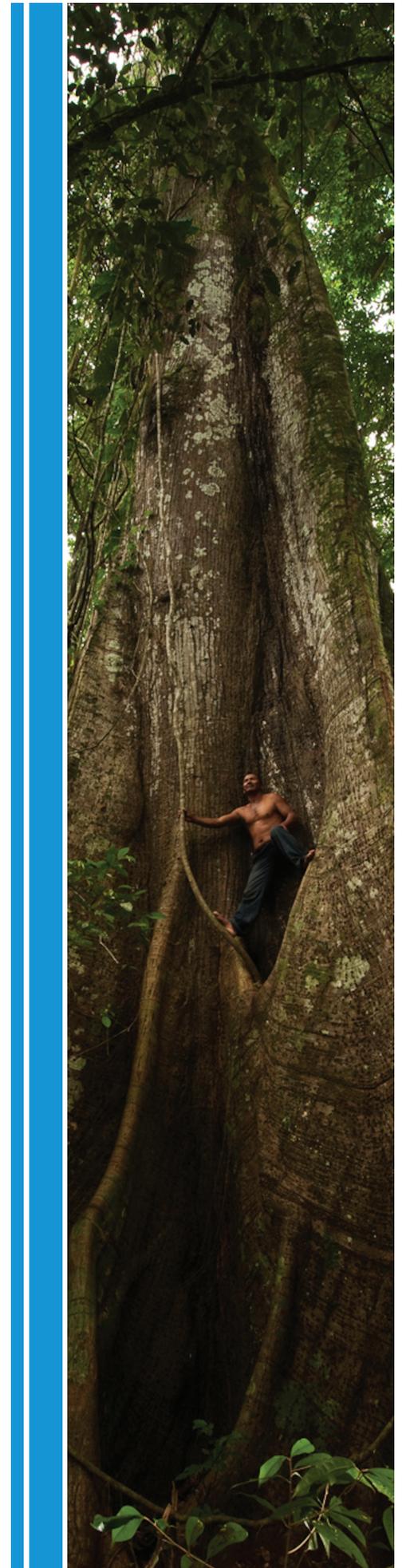
emissions map of Chiapas indicating high-emissions areas over the last 20 years. This map enabled experts to model past land-use change with greater precision. In addition, the team was able to develop a business-as-usual scenario for future land-use change until 2016 that included regions where land-use change is predicted to occur. The team is currently studying the drivers of land-use change in order to fine-tune the models, inform future policy and address limitations of the predictive model.

This work will not just help with carbon accounting. Based on the results of this work, the team was able to make recommendations for aligning policies with REDD+, particularly in the agriculture sector. These policy guidelines, which include input from experts in agriculture, were a major component of the Climate Change Action Program for Chiapas (PACCCH) to guide the government in effectively reducing the state's emissions and encouraging collaboration between different ministries to reduce emissions from agriculture sector.

The PACCCH identified measures that the Chiapas government should take to strengthen local capacity to reduce deforestation and forest degradation. These include economical and technical alternatives for the agriculture sector such as agro-forestry, silviculture and agriculture best practices, among others. This shows that many of the processes associated with setting up forest monitoring and MRV systems can have other benefits for REDD+ planning.

In 2010, the REDD+ Chiapas group (Programa Mexicano del Carbono, ECOSUR, AMBIO, PRONATURA SUR and CI) began to develop a plan for forest carbon MRV at the community level, with the goal of then implementing a pilot to test the concept.

By 2011, the MRV initiative had achieved its goal of building capacities and had established carbon monitoring plots in five communities within the Sierra Madre Coast of the Chiapas region. The methodologies (Paz, et al. 2010) used for this purpose were

quantified and semi-quantified to monitor and evaluate mainly carbon and water. The methodology focused on scaling from the bottom up (from the local to the regional and national levels) of MRV for REDD+. It considered the five carbon pools recognized by IPCC (above- and below-ground biomass, litter and debris, soil and wood products/landfills) and was based on a CONAFOR (Forestry National Commission) methodology. Samples from SAGARPA (Ministry of Agriculture, Cattle, Rural Development, Fishing and Food) were used.

Specific results included the following: the capacities of local communities and regional actors were developed and strengthened. Methodologies and technology to monitor forest carbon were tested in five communities. The methodology was improved and became a "living" methodology that could be adapted to different contexts in different regions. A regional structure to coordinate activities at the subnational level was developed, as was a publication on community forest monitoring.

As such, the first steps are underway for developing a MRV system that can provide ground-truthing for satellite imagery in the future as well as livelihoods for communities that participate in REDD+.

Summary of Case Study 1: Chiapas, Mexico

In September 2011, the state of Chiapas presented its Climate Change Action Program (PACCCH), which had been reviewed and approved by key actors as well as the general public. The program put REDD+ at the forefront of the state's climate change mitigation plans.

The PACCCH contains a state-of-the-art greenhouse gas (GHG) inventory and a spatial analysis at the regional level of past and future deforestation and degradation, both developed using local expertise.

Following IPCC guidelines, biomass data and estimates of forest cover change from 1990 to 2010 were used to develop the analysis.

The document informed a new law passed in the state's congress.

Recommendations from the spatial analysis not only provide a good basis for MRV and the development reference levels, they also fed into the overall strategy and will facilitate engagement from other sectors and ministries in climate change mitigation.

A pilot project trained five communities in field-based forest monitoring and carbon measuring to support future MRV.

Case Study 2: Guyana, building capacity and a national MRV system

Guyana is a high forest cover low deforestation (HFLD) country. As such, most of the country's forests, which cover approximately 85 perent of the territory or 18 million hectares, are intact. Historically, Guyana's deforestation and degradation rate has been low (0.02 percent to 0.06 percent per year). The country's national efforts to implement low carbon initiatives demonstrate its commitment to maintaining its HFLD status. Guyana has been actively involved in shaping the international REDD+ framework and is awaiting an outcome to be able to benefit from REDD+ incentives that can help avoid the loss of forest that has plagued other countries in Latin America.

Guyana is embarking on REDD+ as a framework by which it can attract financial resources to promote and implement low carbon development plans. As part of its readiness preparation for REDD+, the Government of Guyana (GoG) through the Guyana Forestry Commission's (GFC) REDD+ Secretariat recognized the need to develop a robust Measuring, Reporting and Verification System (MRVS) that has a solid scientific basis and is developed through public participation, in particular of land users/resource owners. Through a public participation process and with international support, the GoG developed a 'Roadmap' for Guyana's national MRVS. The roadmap focuses on seven specific areas as a framework towards the development of a MRVS. It also identifies the country's main capacity gaps which must be addressed for implementation of a sound national REDD+ mechanism.

Work is already underway on two important components of the roadmap: (i) The implementation of a comprehensive forest area change assessment for historical periods and (ii) The building of carbon stock measurement and monitoring capacities. These are essential first steps for the development of Guyana's national MRVS.

The Government of Guyana, with support from the government of Norway and Conservation International Guyana (CI-Guyana), conducted historical national forest area change assessments for the periods 1990 to 2009 and 2009 to 2010. Historical archived satellite (LandSat) datasets were processed to assess how forest cover changed over time.

This work also directly fed into a study of the drivers of deforestation in Guyana by comparing the impact of different land uses, such as agriculture, mining, forestry and roads, on land cover at different points in time. The results showed that the main deforestation driver is mining, which accounts for 91 percent of the observed deforestation during the assessment period. The results also indicated the need for more effective measures to address impacts from the mining industry. These findings will help to inform policy design.

The second set of studies–a carbon biomass inventory and monitoring plan and the design of a national forest carbon monitoring system–is scheduled to be completed by the end of 2012. These studies will assess the amount of carbon stored in Guyana's forests and design effective methods and techniques to measure and monitor it. This work is also being implemented by the GFC with support from CI-Guyana through a grant provided by the German Development Bank (KfW). Data are being collected from field plots to generate information, such as carbon conversion values, expansion factors, wood density and root/shoot ratios.

Overall, this component of the MRVS is expected to deliver on three key elements: (i) subnational stratification of key activities related to potential for promoting land-use/land cover change, (ii) training in carbon stock assessment and monitoring, and (iii) design and implementation of the national forest carbon monitoring system for REDD+. In addition, the design and implementation of the long-term national carbon monitoring system is expected to account for greenhouse gas (GHG) emissions and removals that result from various land-use change activities.

Summary of Case Study 2: Guyana

Guyana has been working on a roadmap for its Monitoring, Reporting and Verification system (MRVS) as part of its readiness plan.

Under the MRVS framework, two studies are currently underway:

- a comprehensive assessment of the change in forest cover during the periods 1990 to 2009 and 2009 to 2010. This study also investigated the drivers of deforestation and found that 91 percent of deforestation in those periods was caused by mining.

- a carbon biomass inventory and measurement system to estimate the carbon stored in Guyana's forests.

All of this work will feed into Guyana's MRVS to ensure a robust carbon accounting system.

Studies of drivers can inform policy design and help the country tackle deforestation.

Capacity building is an integral component of Guyana's MRVS development.

The University of Guyana is reshaping its curriculum to build needed capacity and to support the implementation of Guyana's low carbon initiatives, including REDD+ efforts.

Additionally, Guyana is developing a Community MRV process, which will support the national MRVS. The GFC, in collaboration with 16 villages in the North Rupununi, the Iwokrama International Center for Rainforest Conservation and Development (IIC) and the Global Canopy Programme (GCP) launched a Community Monitoring, Reporting and Verification (C-MRV) Project that aims to develop a community-based system to monitor the forest, land use, ecosystem services and well-being of residents, inclusive of a methodology to monitor impacts of future benefits. The project also supports collaboration with other groups in the Amazon to develop a standardized system that could be replicated in other parts of the world.

It is important to recognize that the process of developing and implementing a robust MRVS is less a technology driven process and more one that involves capacity building. Further, the development of a MRVS for REDD+ also serves to improve forest governance and provides a means to build institutional capacity within Guyana in integrated natural resource management.

The MRVS roadmap highlights significant gaps in Guyana's technical capacity to implement REDD+. Emphasis therefore is being placed on the development of a long-term sustainable approach to capacity building. Tertiary technical institutions such as the University of Guyana, are recognized as having a key role in long-term capacity development and to deliver the required technical skills in-country for REDD+ implementation and low carbon initiatives. CI Guyana has been collaborating with the University of Guyana to assist the institution in reshaping its curriculum in preparation for implementation of Guyana's low carbon development plan and to support the national REDD+ effort. In addition, CI-Guyana is providing technical support to the University of Guyana for the design of a center of excellence in biodiversity and forestry research. More immediately, extensive capacity development for the GFC, REDD Secretariat and other key stakeholders (including at the University of Guyana) is being done to meet

short-term needs. The consultants conducting the technical studies for the forest area change assessment and the carbon stock measurement and monitoring are helping to provide this capacity building.

These initiatives will feed into Guyana's national MRVS to ensure a robust carbon accounting system for REDD+ and low carbon development implementation.

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[1] Guyana Forestry Commission (GFC), (2010). Guyana Readiness Preparation Proposal (RPP) (draft).

[2] The seven areas of MRVS Roadmap are: (i) develop and implement a national mechanism and institutional framework; (ii) implement a comprehensive forest area change assessment for historical periods; (iii) build carbon stock measurement and monitoring capacities; (iv) develop MRV for a set of sub-national REDD+ demonstration activities; (v) engagement with the international community; (vi) sustain an internal and national communication mechanism; (vii) conduct and support research on key issues. GFC, (2009). Background, Capacity Assessment and Roadmap).

[3] GFC &Pöyry Forest Industry (PFI), (2010). Guyana REDD+ MRVS, Interim Measures Report.

MRV for REDD+ also provides a means to build the institutional capacity in integrated natural resource management and to improve forest and ecosystem governance.

In order to ensure sustainability, public participation is critical though costly–this must be taken into account in the provision of support.

What the UNFCCC says about MRV:

Monitoring and MRV: Decision 1/CP.16 requests SBSTA to develop modalities for both forest monitoring and reporting systems and for measuring, reporting and verifying (MRV) anthropogenic forest-related fluxes, forest carbon stocks, and changes in forest carbon stocks and forest area (Appendix II).

Decision 4/ CP.15 provides "methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forest and enhancement of forest carbon stocks in developing countries" and builds from the guidance in **1/CP.13** and **2/CP.13.**

Decision 4/CP.15 also requests developing countries "to use the most recent Intergovernmental Panel on Climate Change guidance and guidelines;" the IPCC-issued Guidelines (1996 and 2006) and LULUCF Good Practice Guidance (2003) are the basis of forest carbon measuring, monitoring and reporting under the Convention and its Kyoto Protocol.

Find out more!

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Read about the Climate Change Action Program
(in Spanish): www.cambioclimaticochiapas.org
Read about CI Mexico's work: http://www.
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pages/mexico.aspx

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Read the MRVS and the consultancy reports:
http://www.forestry.gov.gy/publications.html
Read about CI Guyana's work here:
http://www.conservation.org.gy
And here: http://www.conservation.org/where/
south_america/guyana/pages/guyana.aspx

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REDD+ case studies
These case studies belong to a series published by CI to examine our
on-the-ground experience in over 30 countries and provide lessons on
how REDD+ can be successfully implemented.

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We imagine a healthy,
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