



**Pacific-German Regional Programme
Adaptation to Climate Change in the Pacific Island Region**

**Fiji REDD Policy & Scoping Workshop
Background Materials**

27 August – 02 September 2009

Suva, Fiji

Dr Sean Weaver

September 2009





20 August 2009

Fiji REDD Policy & Scoping Workshop Background Materials

The three international consultants to this Policy & Scoping Workshop are Dr Sean Weaver (Principal Consultant and REDD Policy Expert), Dr Martin Herold (Remote Sensing Expert), and Dr Ian Payton (Forest Carbon Inventory Expert). This report provides a summary of background material provided by these three consultants, and also provides an overview of the methodological and policy issues to be addressed in the forthcoming workshop. Some of this material will be used in the reporting arising from this workshop and as such some of this material will be edited and modified in response to the information generated by the workshop itself. The purpose of this document is to provide a briefing for Workshop Participants and background materials to support the workshop activities.

Sean Weaver

Sean has collated a series of background documents for the workshop and will add a workshop planning document which will be provided to GTZ on Monday 24th September.

The policy dimensions of the workshop will involve working with workshop participants to define the desired goals of a national forest sector response to climate change with REDD as a centrepiece but focused on more than REDD.

The Fiji REDD program is an effort to build capacity and readiness for REDD in terms of policy, financing, implementation and management. This program is not promoting a carbon markets approach to REDD, but neither is it ignoring the opportunity to finance components of a national forest sector climate change strategy through this financing channel given that carbon markets seem likely to play a role in the REDD sector in the near future – either through a UNFCCC instrument, the USA domestic market, or the voluntary carbon market. REDD Readiness involves capacity building for any set of financing instruments for this sector – because they all require a common set of quality assurance infrastructures.

The forest sector has been identified in many parts of the world as a priority sector for climate change adaptation, both in terms of the need for the forest sector to adapt to climate change and the role of the forest sector in helping to maintain and enhance resilient catchments in the face of future climate change.

One way of financing forest sector climate resilience (through maintaining and enhancing forested catchments) is through a combination of adaptation and mitigation funding streams in the forest sector.

One of the key co-benefits of forest sector mitigation such as REDD + (i.e. integrating REDD, AR, and forest conservation) is climate change adaptation by means of enhancing the resilience of water catchments. In reciprocal fashion, one of the key co-benefits of forest sector adaptation (where this adaptation involves

maintaining the structural integrity of forested catchments and associated ecosystem services) is climate change mitigation (e.g. avoided emissions and/or carbon sequestration).

Accordingly, one of the key strategic dimensions of the Fiji REDD Policy and Scoping Workshop will be to identify priorities for forest sector synergies for climate change adaptation and mitigation combined.

Central to a forest sector climate change mitigation and adaptation strategy is the identification of financing mechanisms capable of assisting the implementation of such a strategy. The character of relevant financial instruments available both domestically and internationally can help to define the scope and structure of a national strategy. By clarifying the requirements of these financial instruments, a strategic policy process can align itself in a very practical manner to sources of finance capable of supporting and enabling the delivery of policy goals. The sources of finance available to forest sector climate change adaptation and mitigation include international grant and carbon finance. Both of these broad categories of financial instrument have eligibility criteria that relate to the transparent quantification of the resource and the capability of managing that resource for adaptation and mitigation purposes. In addition to this there are different types of financing instrument for climate change mitigation actions. These include grant finance, the current UNFCCC compliance carbon market (CDM), future UNFCCC compliance carbon market instruments (e.g. arising from the Copenhagen agreement in December 2009), the non-UNFCCC domestic carbon market in the USA, the international voluntary carbon market, and potentially a future domestic voluntary carbon market.

All of these instruments share a lowest common denominator in terms of the in-country capacity to quantify carbon stocks and carbon stock change. Furthermore, the greatest opportunities for gaining access to climate-related finance arise where a country has domestic forest carbon monitoring and inventory capabilities operating at a high standard. This needs to include national and project-based carbon monitoring and inventory capability.

The policy components of this workshop will therefore focus on:

- aligning Fiji capacity and infrastructures with international financial instruments in forest sector climate related finance
- identifying the key causes of forest sector climate change liabilities (loss of resilience, carbon emissions, loss of opportunities) in terms of both adaptation and mitigation
- identifying priorities for developing solutions to these forest sector climate change liabilities
- identifying a framework for implementing an integrated national forest sector climate change strategy

Martin Herold

Martin has prepared a package to download that includes all required materials for the workshop. They are provided as an attachment.

The file includes:

- 1) A series of background documents (as pdf and weblink) and a copy of the IPCC guidelines (as pdf and weblink), for the workshop I suggest the following:

- UNFCCC SBSTA 30 decision and draft text for Copenhagen (should be available to workshop participants)
- UNFCCC/SBSTA technical paper on costs of monitoring for REDD (printed copies should be distributed at the workshop to each relevant institution or participant)
- GOFC-GOLD REDD technical Sourcebook (this is 180 pages and 3-4 printed should be available to key technical people)
- IPCC GPG on LULUCF and AFOLU (should be made available in National REDD Strategy document database, no printing necessary for the workshop)

2) 2 Powerpoint presentations:

- The first one for the plenary workshop following your guidance on content
- The second for the detailed remote sensing training

If the presentations are made available to all participants, could I ask you to do so as pdf. I am happy to share the powerpoints but not open and to everybody at this point. I assume that I will still do some modifications once we have started with discussions in Fiji during the first 3 days.

Ian Payton

Ian has prepared the following documents:

- Soil data collection manual
- Designing systems to monitor carbon stocks
- Peer review of NZ carbon monitoring program
- Planted forest data collection manual
- Soil carbon model
- Natural forest & shrubland data collection manual
- Powerpoint presentations that are being edited up until the time of the workshop and modified in response to stakeholder meetings in the days at the beginning of the first week in Suva

BUILDING NATIONAL CARBON MONITORING SYSTEMS FOR REDD: ELEMENTS AND CAPACITIES

Policy background

While policy and compensations mechanisms for implementing REDD (particularly the question of whether they should be market or fund based) are still under discussion by the UNFCCC (in the process of long-term collaborative action- LCA), the draft text on methodology for REDD produced by SBSTA30 in June 2009 (UNFCCC 2009) makes it clear that not only reduced emissions from deforestation and degradation, but also forest conservation, sustainable forest management (SFM) and forest enhancement are likely to be included in the REDD agreement which will be finalized at the climate summit in Copenhagen in December 2009. These three elements are usually jointly referred to as 'REDD Plus'. The draft also refers to the need to establish monitoring systems that use an appropriate combination of remote sensing and ground-based forest carbon inventory approaches with a focus on estimating anthropogenic forest-related greenhouse gas emissions by sources, removals by sinks, forest carbon stocks and forest area changes. All estimates should be transparent, consistent, as accurate as possible, and should reduce uncertainties, as far as national capabilities and capacities permit. It is further indicated that these monitoring systems and their results will be open to independent review as agreed by the Conference of the Parties (COP). The draft text makes particular reference to the need to involve local communities in measuring and monitoring carbon stocks.

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, but there remain some important conceptual gaps before the necessary modalities for this interesting and progressive policy can be implemented and operationalized in specific country circumstances. 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). REDD+ assumes 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

- a. the need to specify policies to alter human activities towards a more climate friendly development pathway,
- b. the means to measure and report their carbon impact on the local, national and global level, and
- c. the link between the two.

Since current REDD+ discussions are dealing with both cause-oriented and emission-oriented approaches dealing with these concepts becomes even more critical and sensitive.

It is currently not practical or efficient to measure and report the stocks and changes for the global 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 are encouraged to start right away and the current primary aim should be how the three objectives noted above can be addressed given that:

- 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,
- many developing countries 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,
- resources to address REDD+ will be limited and not suitable to address all issues everywhere at the same time. While all countries should be encouraged to participate from the beginning, their entry points will vary and priority setting and efficient implementation strategies will be needed on the international, national and sub-national level.

Thus, we should understand the use of concepts like deforestation, degradation and conservation as a means to provide agreed international frameworks and to scope and define practical and efficient implementation strategies (policies and Monitoring, Reporting, and Verification) for countries and actors to start REDD+ actions. This should include the definition of long-term targets and the specification of near-term priorities. For example, in the case of national monitoring, it is not practical to measure each ton of carbon or each tree individually on a regular basis. However, it is possible and efficient to achieve some level of national monitoring with most detail and certainty in spatially limited areas of “REDD actions” that prove and verify the positive climate management effects of policies and their implementation.

Suggested reading

The following set of documents should be circulated and printed for the workshop:

1. UNFCCC/SBSTA technical paper on costs of monitoring for REDD published in June 2009 (printed copies should be distributed at the workshop): <http://unfccc.int/resource/docs/2009/tp/01.pdf>
2. GOF-C-GOLD REDD technical sourcebook, updated version published in July 2009 (3-4 printed should be available to key technical people): http://www.gofc-gold.uni-jena.de/redd/sourcebook/Sourcebook_Version_July_2009_cop14-2.pdf
3. UNFCCC SBSTA 30 decision and draft text for Copenhagen negotiated in June 2009 (should be available to workshop participants): <http://unfccc.int/resource/docs/2009/sbsta/eng/l09.pdf>

The technical experts participating in the workshop are encouraged to consider the recent guidelines and guidance:

- Guidelines (2003) on Land Use Land Use Change and Forestry (LULUCF), focus on chapters 2 and 3:
 - <http://www.ipcc-nggip.iges.or.jp/public/gpoglulucf/gpoglulucf.html>
- Guidance on Agriculture Forestry and other Land Uses (AFOLU), focus on chapters 1-4:
 - <http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html>

National forest monitoring for REDD

A national forest monitoring systems for REDD is a fundamental requirement and area of investment for participation in the REDD process. Despite the broader benefits of monitoring national forest resources per se, there is a set of specific requirements for establishing a national forest carbon monitoring system for REDD implementation. They include:

- The considerations of a national REDD implementation strategy (requires a coordinating national/international process – ongoing for Fiji);
- Systematic and repeated measurements of all relevant forest-related carbon stock changes. Robust and cost-effective methodologies for such purpose are existing (see UNFCCC workshop in REDD monitoring methods: report and presentations under: http://unfccc.int/methods_and_science/lulucf/items/4289.php);
- The estimation and reporting of carbon emissions and removals on the national level using the IPCC Good Practice Guidelines on Land Use Land Use Change and Forestry (LULUCF) given the related requirements for transparency, consistency, comparability, completeness, and accuracy;
- The encouragement for the monitoring systems and results to review independently.

The development of a national monitoring system for REDD is a process and several requirements need to be considered to implement a national monitoring system. The first component – *forest area change monitoring* – needs to deliver forest area and spatially explicit forest area change, corresponding to approach 3 of IPCC guidelines for LULUCF and AFOLU. It therefore requires the application of transparent and consistent datasets. The use of remote sensing technologies is considered a suitable approach for most developing countries to assess historical and future deforestation rates. The application of remote sensing techniques requires technical resources, infrastructure and human capacity for data acquisition, storage, processing and analysis and needs to consider the national circumstances. For the second component - *carbon stock and carbon stock change estimation* – the IPCC GPG provides different tiers regarding the level of detail and accuracy.

Tier	Details
Tier 1	IPCC methods and IPCC default values (no data collection needed)
Tier 2	IPCC methods and country specific data for key factors (including more detailed country specific strata)
Tier 3	Country specific methods or models, national inventory of key carbon stocks, repeated measurements of permanent plots to directly measure changes in forest biomass

The application of Tier 2 requires technical resources, infrastructure and human capacity for forest inventory estimations. For Tier 3, detailed measurements of carbon stock changes need to be provided for different carbon pools (e.g. through permanent field plots).

Table 1 lists the key components and required capacities for establishing a national monitoring system for estimating emissions and removals from forests. The first section of planning and design should specify the monitoring objectives and implementation framework based on the understanding of:

- the status of international UNFCCC decisions and related guidance for monitoring and implementation;
- the national REDD implementation strategy and objectives;
- knowledge in the application of IPCC LULUCF good practice guidelines;
- existing national forest monitoring capabilities;
- expertise in estimating terrestrial carbon dynamics and related human-induced changes;
- the consideration of different requirements for monitoring forest changes in the historical (reference period) and for the future (accounting period);

The planning and design phase should result in a national REDD monitoring framework (incl. definitions, monitoring variables, institutional setting etc.), and a plan for capacity development and long-term improvement and the estimation of anticipated costs.

Table 1: Components and required capacities for establishing a national monitoring system for estimating emissions and removals from forests.

Phase	Component	Capacities required
Planning & design	1. Need for establishing a forest monitoring system as part of a national REDD implementation activity	<ul style="list-style-type: none"> • Knowledge on international UNFCCC decisions and SBSTA guidance for monitoring and implementation • Knowledge of national REDD implementation strategy and objectives
	2. Assessment of existing national forest monitoring framework and capacities, and identification of gaps in the existing data sources	<ul style="list-style-type: none"> • Understanding of IPCC LULUCF estimation and reporting requirements • Synthesis of previous national and international reporting (i.e. UNFCCC national communications & FAO Forest Resources Assessment) • Expertise in estimating terrestrial carbon dynamics, related human-induced changes and monitoring approaches • Expertise to assess usefulness and reliability of existing capacities, data sources and information
	3. Design of forest monitoring system driven by UNFCCC reporting requirements with objectives for historical period and future monitoring	<ul style="list-style-type: none"> • Detailed knowledge in application of IPCC LULUCF good practice guidelines • Agreement on definitions, reference units, and monitoring variables and framework • Institutional framework specifying roles and responsibilities • Capacity development and long-term improvement planning • Cost estimation for establishing and strengthening institutional framework, capacity development and actual operations and budget planning
Monitoring	4. Forest area change assessment (activity data)	<ul style="list-style-type: none"> • Review, consolidate and integrate the existing data and information • Understanding of deforestation drivers and factors • If historical data record insufficient – use of remote sensing: <ul style="list-style-type: none"> ◦ Expertise and human resources in accessing, processing, and interpretation of multi-date remote sensing imagery for forest changes ◦ Technical resources (Hard/Software, Internet, image database) ◦ Approaches for dealing with technical challenges (i.e. cloud cover, missing data)
	5. Changes in carbon stocks	<ul style="list-style-type: none"> • Understanding of processes influencing terrestrial carbon stocks • Consolidation and integration of existing observations and information, i.e. national forest inventory or permanent sample plots: <ul style="list-style-type: none"> ◦ National coverage and carbon density stratification ◦ Conversion to carbon stocks and change estimates • Technical expertise and resources to monitor carbon stock changes: <ul style="list-style-type: none"> ◦ In-situ data collection of all the required parameters and data processing ◦ Human resources and equipment to carry out field work (vehicles, maps of appropriate scale, GPS, measurements units)

		<ul style="list-style-type: none"> ○ National inventory/permanent sampling (sample design, plot configuration) ○ Detailed inventory in areas of forest change or “REDD action” ○ Use of remote sensing (stratification, biomass estimation) ● Estimation at sufficient IPCC Tier level for: <ul style="list-style-type: none"> ○ Estimation of carbon stock changes due to land use change ○ Estimation of changes in forest areas remaining forests ○ Consideration of impact on five different carbon pools
	6. Emissions from biomass burning	<ul style="list-style-type: none"> ● Understanding of national fire regime and fire ecology, and related emission for different greenhouse gases ● Understanding of slash and burn cultivation practice and knowledge of the areas where being practiced ● Fire monitoring capabilities to estimate fire effected area and emission factors: <ul style="list-style-type: none"> ○ Use of satellite data and products for active fire and burned area ○ Continuous in-situ measurements (particular emission factors)
	7. Accuracy assessment and verification	<ul style="list-style-type: none"> ● Understanding of error sources and uncertainties in the assessment process ● Knowledge on the application of best efforts using appropriate design, accurate data collection, processing techniques, and consistent and transparent data interpretation and analysis ● Expertise on the application of statistical methods to quantify, report and analyze uncertainties for all relevant information (i.e. area change, change in carbon stocks etc.) using, ideally, a sample of higher quality information
Analysis & reporting	8. National GHG information system	<ul style="list-style-type: none"> ● Knowledge on techniques to gather, store, and analyze forest and other data, with emphasis on carbon emissions from LULUCF ● Data infrastructure, information technology (suitable hard/software) and human resources to maintain and exchange data and quality control
	9. Analysis of drivers and factors of forest change	<ul style="list-style-type: none"> ● Understanding and availability of data for spatio-temporal processes affecting forest change, socio-economic drivers, spatial factors, forest management and land use practices, and spatial planning ● Expertise in spatial and temporal analysis and use of modeling tools
	10. Establishment of reference emission level and regular updating	<ul style="list-style-type: none"> ● Data and knowledge on deforestation and forest degradation processes, associated GHG emissions, drivers and expected future developments ● Expertise in spatial and temporal analysis and modeling tools ● Specifications for a national REDD implementation framework
	11. National and international reporting	<ul style="list-style-type: none"> ● Expertise in accounting and reporting procedures for LULUCF using the IPCC GPG ● Consideration of uncertainties and understanding procedures for independent international review

Implementing measurement and monitoring procedures to obtain basic information to estimate GHG emissions and removals requires capabilities for data collection for a number of variables. Carbon data derived from national forest inventories and permanent plot measurements, and remote sensing-based monitoring (primarily to estimate activity data) are most commonly used. In addition, information from the compilations of forest management plans, independent reports, and case studies and/or models have provided useful forest data for national monitoring purposes. Irrespective of the choice of method, the uncertainty of all results and estimates need to be quantified and reduced as far as practicable. A key step to reduce uncertainties is the application of best efforts using suitable data source, appropriate data acquisition and processing techniques, and consistent and transparent data interpretation and analysis. Expertise is needed for the application of statistical methods to quantify, report, and analyze uncertainties, the understanding and handling of error sources, and approaches for a continuous improvement of the monitoring system both in terms of increasing certainty for estimates (i.e. move from Tier 2 to Tier 3) or for a more complete estimation (include additional carbon pools).

All relevant data and information should be stored, updated, and made available through a common data infrastructure, i.e. as part of national GHG information system. The information system should provide the basis for the transparent estimation of emissions and removals of greenhouse gases. It should also help in analysis of the data (i.e. determining the drivers and factors of forest change), support for national and international reporting using a common format of IPCC GPG ‘reporting tables’, and in the implementation of quality assurance and quality control procedures, perhaps followed by an expert peer review.

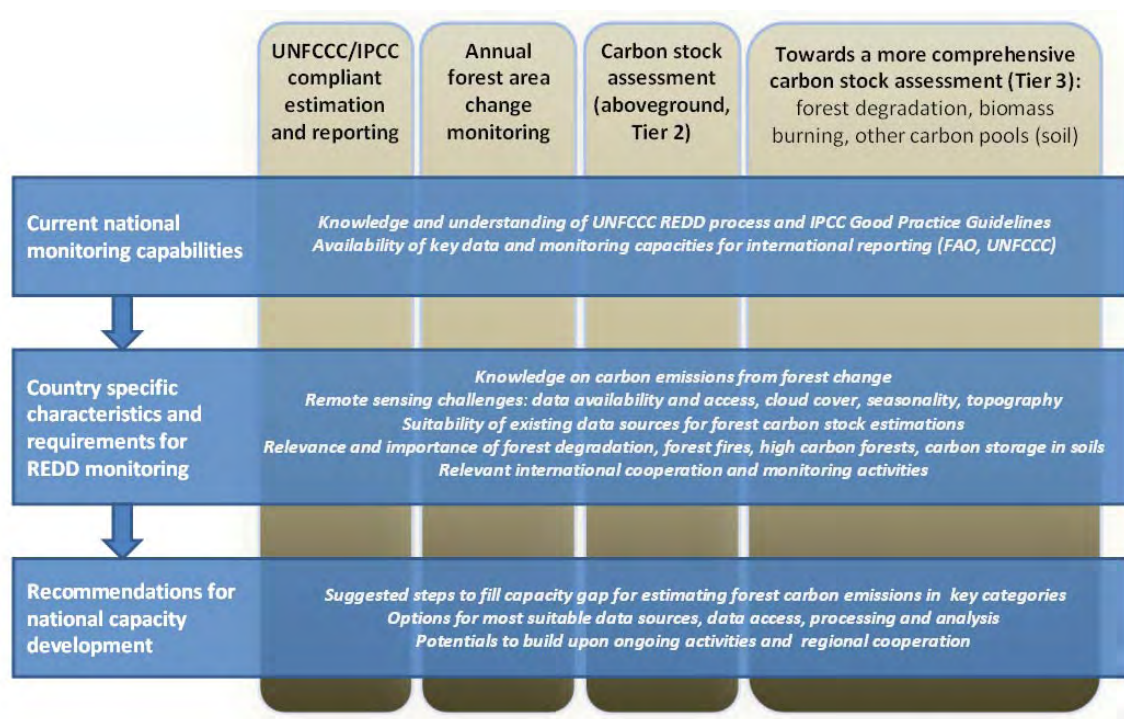


Figure 1: Conceptual framework to derive recommendations for national capacity development for REDD.

As exemplified in Figure 1, the evaluation of country capacities and REDD specific characteristics provides the basis to specify the recommendations and next steps for . Starting with an assessment of current capacities, additional information on country-specific characteristics and requirements for REDD will need to be analyzed. The components listed in Table 1 help to define the requirements that a monitoring system should include and deliver, following the requirements outlined in the IPCC GPG. The difference between the current status and the requirements provides information on the capacity gap.

Uncertain input data (i.e. on forest area change and C stock change) is a common phenomenon among non-Annex I countries but adequate methods exist to improve monitoring capacities. A starting point is to critically analyze existing forest data and monitoring capabilities for the purpose of systematic estimation and reporting using the IPCC LULUCF GPG. Table 2 lists several key existing data sources that are commonly considered useful.

Table 2: Examples of important existing data sources useful for establishing national REDD monitoring

Variable	Focus	Existing records	Existing information
Area changes (activity data)	Deforestation	<i>Archived satellite data & airphotos</i>	<i>Maps & rates of deforestation and /or forest regrowth</i>
	Forest regrowth	<i>Field surveys and forest cover maps</i> <i>Maps of forest use and human infrastructures</i>	<i>Land use change maps</i> <i>National statistical data</i>
Changes in carbon stocks / emission factors	Land use change (deforestation)	<i>Forest inventory, site measurements</i> <i>Permanent sample plots, research sites</i>	<i>Carbon stock change and emission/ha estimates</i>
	Changes in areas remaining forests	<i>Forest/ecosystem stratifications</i>	<i>Long-term measurements of human induced carbon stock changes</i>
	Different C-pools (i.e. soils)	<i>Forest concessions/harvest estimates</i> <i>Volume to carbon conversion factors</i> <i>Regional carbon stock data/maps</i>	
Biomass burning	Emissions of several GHG	<i>Records of fire events (in-situ)</i> <i>Satellite data</i> <i>Emission factor measurements</i> <i>Records of areas under slash and burn cultivation</i>	<i>Burnt area map products</i> <i>Fire regime, area, frequency & emissions</i>
Ancillary (spatial) data	Drivers & factors of forest changes	<i>Topographic maps</i> <i>Field surveys</i> <i>Census data</i>	<i>GIS-datasets on population, roads, land use, planning, topography, settlements</i>

Some of the common gaps in current national monitoring capacities can be summarized by considering the five IPCC GPG estimation and reporting principles:

- **Consistency:** Reporting by many countries are based either on single-date measurements or on integrating different heterogeneous data sources rather than using a systematic and consistent monitoring;
- **Transparency:** Expert opinions, independent assessments or model estimations are commonly used as information source for forest carbon data; often causing a lack of transparency in the methods used;
- **Comparability:** Few countries have experience in using the IPCC GPG as common estimation and reporting format among Parties;
- **Completeness:** The lack of suitable forest resource data in many non-Annex countries is evident for both area change and changes carbon stocks. Carbon stock data for aboveground and belowground carbon are often based on estimations or conversions using IPCC default data and very few countries are able to provide information on all five carbon pools.
- **Accuracy:** There is limited information on error sources and uncertainties of the estimates and reliability levels by countries and approaches to analyze, reduce, and deal with them for international reporting and for implementation of carbon crediting procedures.

In case there are no consistent times series of historical forest area change data, the country should consider using archived satellite data and establish the required monitoring capacities. Forest inventory data are currently the most common data source for the estimation of changes in forest carbon stocks. However most of the existing and traditional forest inventories have not been designed for carbon stock assessments and have limited use for this purpose. Ideally and in some contrast to traditional inventories, the design for national carbon stock inventory should consider the following requirements:

- **Stratification of forest area:** by carbon density classes and relevant human activities effecting forest carbon stocks;
- **Coverage:** full national coverage with most detail and accuracy required in areas of “REDD relevant activities”;
- **Site measurements:** emphasize on measuring carbon stocks, potentially in all carbon pools;
- **Time:** consistent and recurring measurements of carbon stock change, i.e. for deforestation and in areas remaining as forests (i.e. degradation);
- **Uncertainties:** verification and considerations for independent international review.

The investments and priority setting for monitoring carbon stock changes related to forests, in all carbon pools (i.e. soils, biomass burning) may depend on how significant the related human-induced changes are for the overall carbon budget and the national REDD implementation strategy are. For example, if the country has no fire regime and no significant emission from biomass burning it is not necessary to develop a related monitoring. The monitoring of carbon changes in forests remaining as forests (both increase and decrease) is generally less efficient than for the case deforestation, i.e. lower carbon stock changes per ha versus higher monitoring costs and, usually, lower accuracies. On the other hand, monitoring of forest degradation is important since the cumulative emission can be significant and updated data are required to avoid displacement of emissions from reduced deforestation. A country should have understanding and regularly monitor the human processes causing loss or increases in forest carbon stocks, i.e. through a recurring assessment of degraded forest area. However, the level of detail and accuracy for actual carbon stock changes should be higher for countries interested in claiming credits for their activities (i.e. reducing emissions from forest degradation). In this case, the establishing the REDD monitoring system should put particular emphasis in building the required capacities that usually require long-term, ground-based measurements. A similar procedure maybe suggested for the monitoring of changes in other carbon pools.

To date, very few developing countries report data on soil carbon, even though emissions maybe significant, i.e. emissions from deforested or degraded peatlands. If the soil carbon pool is to be included in country strategy to receive credits for reducing emissions from forest land, the related monitoring component should be established from the beginning to provide the required accuracy for estimation and reporting. For other countries, the monitoring of emissions and removals from all carbon pools and all categories is certainly encouraged in the longer-term but maybe of lower priority and require smaller amount of resources in the readiness phase. This approach is supported the current IPCC guidance which already allow a cost-efficient use of available resources,

e.g. the concept of key categories¹ indicate that priority should be given to the most relevant categories and/or carbon pools. This flexibility can be further expanded by the concept of conservativeness²”.

The analysis and use of existing data is most important for the estimation of historical changes and for the establishment of the reference emission levels. Limitations of existing data and information may constrain the accuracy and completeness of the LULUCF inventory for historical periods, i.e. for lack of ground data. In case of uncertain or incomplete data, the estimates should follow, as much as possible, the IPCC reporting principles and should be treated conservatively with motivation to improve the monitoring over time. The monitoring and estimation activities for the historical period should include a process for building the required capacities within the country to establish the monitoring, estimation and reporting procedures as long-term term system. Consistency between the estimates for the historical period and future monitoring is essential. The existing gaps and known uncertainties of the historical data should be addressed in future monitoring efforts as part of a continuous improvement and training program.

¹ Key categories are sources of emissions/removals that contribute substantially to the overall national inventory (in terms of absolute level and/or trend). According to the IPCC-GPG, key categories should be estimated higher Tiers (2 or 3), which means that Tier 1 is allowed for non-key categories.

² Conservativeness is a concept used by the provisions of the Kyoto Protocol. In the REDD context, conservativeness may mean that - when completeness or accuracy of estimates cannot be achieved - the reduction of emissions should not be overestimated, or at least the risk of overestimation should be minimized

TASKS OF THE CONSULTANTS (TOR)

1. REDD Policy Expert (Dr Sean Weaver)

The REDD policy Consultant will be the **Principal consultant** for this mission and there responsible for the delivery of stated the outputs.

In close collaboration with SPC/GTZ Pacific-German Regional Program on Adaptation to Climate Change in the Pacific Island Region (ACCPIR), the Fiji Forestry Department, the REDD Remote Sensing expert, and the REDD Forest Inventory expert, the **REDD Policy Expert** shall:

1. Prepare supporting documents and resource materials concerning REDD policy options and considerations for Fiji.
2. Attend the National REDD Policy and Scoping Workshop and deliver a PowerPoint presentation on REDD policy options for Fiji and the linkage between policy considerations and technical requirements.
3. At the National REDD Policy and Scoping Workshop, facilitate a policy development and scoping exercise to enable the development of a framework for a National REDD Strategy containing the following components:
 1. Initial policy development to define a National REDD Strategy Framework which will involve clearly defining:
 - a. The problem (in a Fiji context).
 - b. The causes of the problem (including deforestation and degradation drivers).
 - c. The solution as a set of desired outcomes (determining the necessary interventions and addressing the drivers).
 - i. REDD as a component of national strategic development (including cross-sectoral linkages and synergies).
 - ii. Strategic considerations arising from resource base (forest types, threats, and geographical distribution).
 - iii. National, provincial, and/or project scale management approaches.
 - iv. Role of different sectors (government, landowners, private sector, NGOs).
 - v. Addressing deforestation and degradation drivers (including considerations for addressing net and gross opportunity costs).
 - d. The high level architecture of the implementation strategy for delivering the solution (strategy or roadmap).
 - e. Scoping international policy engagement, including:
 - i. Ensuring awareness of international support available (UNFCCC, World Bank, Bilateral and multilateral donors).
 - ii. The best way to represent Fiji's best interests in international policy forums.
 - iii. An approach to exchange experience with other nations.
 - f. Scoping priorities for pilot projects that determine:
 - i. Project types (e.g. high risk, medium risk, low risk areas, avoided deforestation, avoided degradation, linking avoided deforestation with afforestation/reforestation, large scale, small scale, aggregations).
 - ii. Selection of target carbon market standard and initial eligibility assessment.

- iii. Technical capability assessment.
 - iv. Defining the role of non-government sectors (NGO's private sector).
 - v. Scoping the reporting requirements for pilot projects.
 - vi. Scoping pilot project planning and budgeting.
 - vii. Defining tasks and responsibilities for implementation.
2. Detailed scoping of the national implementation strategy to determine:
 - a. The REDD financing mechanisms to be targeted (e.g. UNFCCC compliance market, international voluntary market, USA domestic compliance market, domestic/regional voluntary market).
 - b. Infrastructural strengthening including assessment and refinement of:
 - i. Legal and policy instruments.
 - ii. The structure and approval procedures of Designated National Authority (DNA)
 3. Scoping linkages between policy and technical/methodological streams in a National REDD Strategy by working in consultation with the technical stream of the National REDD Policy & Scoping Workshop.

2. Remote Sensing Expert (Dr Martin Herold)

In close collaboration with SPC/GTZ Pacific-German Regional Program on Adaptation to Climate Change in the Pacific Island Region (ACCPiR), the Fiji Forestry Department, the REDD Policy expert, and the REDD Forest Inventory expert, the **Remote Sensing Expert** shall:

1. Prepare supporting documents and resource materials concerning international (IPCC & UNFCCC) guidelines and requirements for a national forest carbon monitoring program for Fiji, that will be compliant with emerging UNFCCC criteria for REDD.
2. Attend the National REDD Policy and Scoping Workshop and deliver a PowerPoint presentation on the remote sensing requirements of a national forest carbon monitoring program for Fiji.
3. At the National REDD Policy and Scoping Workshop, work with the Fiji Forestry Department to undertake a review of the Fiji forest sector remote sensing data, data sources, data infrastructures, and data management capability in order to understand clearly the current state of technical and human resources for a national forest carbon monitoring system. This review will also identify any gaps that need to be filled by means of acquiring new data, new technical resources and new capabilities consistent with development of a national forest carbon monitoring program. In particular, this review will:
 - a. Assess existing data sets for national forest carbon monitoring and carbon inventory in line with the 2003 IPCC Good Practice Guidance for LULUCF sector and the 2006 IPCC Greenhouse Gas Inventory criteria.
4. At breakout sessions during the National REDD Policy and Scoping Workshop contribute to the draft design of a national forest carbon monitoring system using existing data sets and systems where appropriate and filling gaps in national data where necessary (using IPCC guidelines described above).
5. At breakout session during the National REDD Policy and Scoping Workshop, contribute to the design of a national historical baseline methodology for forest sector carbon emissions and help to determine adjustment factors to build into future baseline projections (using UNFCCC approved methodologies).

6. At breakout session during the National REDD Policy and Scoping Workshop assist with the development of a draft operational plan for implementation of national forest carbon monitoring and inventory program.
7. Undertake a 1 day REDD remote sensing training workshop with appropriate government officials during the National REDD Policy and Scoping Workshop.
8. Work with the REDD policy consultant and the Fiji Forestry Department to assist in aligning forest carbon emissions and forest carbon stock assessment methodologies with a national policy approach to REDD. In particular, provide technical advice associated with the definition of eligibility and quality assurance criteria for participation in targeted REDD incentive mechanisms (e.g. international voluntary carbon market, future UNFCCC compliance carbon market, future USA domestic compliance market).
9. Be a resource person in plenary and group work discussion sessions and facilitate sessions where necessary.
10. Work with the REDD policy consultant and the REDD forest inventory consultant to draft a report on the meeting outcomes regarding the national forest carbon monitoring program for Fiji, including recommendations for next steps.

3. The REDD Forest Inventory Expert (Dr Ian Payton)

In close collaboration with SPC/GTZ Pacific-German Regional Program on Adaptation to Climate Change in the Pacific Island Region (ACCPIR), the Fiji Forestry Department, the REDD Policy expert, and the REDD Remote Sensing expert, the **Forest Inventory Expert** shall:

1. Prepare supporting documents and resource materials concerning international (IPCC & UNFCCC) guidelines and requirements for a national forest carbon inventory for Fiji, that will be compliant with emerging UNFCCC criteria for REDD, and project scale inventory requirements.
2. Attend the National REDD Policy and Scoping Workshop and deliver a PowerPoint presentation on the forest inventory requirements of a national forest carbon monitoring program for Fiji.
3. At the National REDD Policy and Scoping Workshop, work with the Fiji Forestry Department to undertake a review of the Fiji forest sector forest inventory data, data sources, data infrastructures, and data management capability in order to understand clearly the current state of technical and human resources for a national forest carbon inventory. This review will also identify any gaps that need to be filled by means of acquiring new data, new technical resources and new capabilities consistent with development of a national forest carbon monitoring program. In particular, this review will:
 - a. Assess existing data sets for national forest carbon inventory in line with the 2003 IPCC Good Practice Guidance for LULUCF sector and the 2006 IPCC Greenhouse Gas Inventory criteria.
4. At breakout sessions during the National REDD Policy and Scoping Workshop contribute to the draft design of a national forest carbon inventory system using existing data sets and systems where appropriate and filling gaps in national data where necessary (using IPCC guidelines described above).
5. At breakout session during the National REDD Policy and Scoping Workshop, contribute to the design of a national historical baseline methodology for forest sector carbon emissions and help to determine adjustment factors to build into future baseline projections (using UNFCCC approved methodologies).
6. At breakout session during the National REDD Policy and Scoping Workshop assist with the development of a draft operational plan for implementation of national forest carbon inventory program.

7. Undertake a forest carbon inventory training workshop with Department of Forestry staff during the National REDD Policy and Scoping Workshop.
8. Work with the REDD Policy Consultant, the REDD Remote Sensing Consultant and the Fiji Forestry Department to assist in aligning forest carbon emissions and forest carbon stock assessment methodologies with a national policy approach to REDD. In particular, provide technical advice associated with the definition of eligibility and quality assurance criteria for participation in targeted REDD incentive mechanisms (e.g. international voluntary carbon market, future UNFCCC compliance carbon market, future USA domestic compliance market).
9. Be a resource person in plenary and group work discussion sessions and facilitate sessions where necessary.
10. Work with the REDD Policy Consultant and the REDD Remote Sensing Consultant to draft a report on the meeting outcomes regarding the national forest carbon monitoring program for Fiji, including recommendations for next steps.