

# UN-REDD PROGRAMME



## Targeted Support on Strengthening Regional Capacity in National Forest Carbon Inventory in West Africa

<b>1. SUMMARY OF REQUEST</b>	
<b>Main Objective</b>	The main aim of the TS is to strengthen regional capacity for the development of National Forest Carbon Inventories in West Africa.
<b>Countries Involved</b>	Bénin, Côte d'Ivoire, Ghana, Guinea Bissau, Liberia, Nigeria, and Togo
<b>Main results expected</b>	<p><b>Outcome 1</b> : Enhanced regional cooperation and capacities on NFMS, MRV and data sharing</p> <p><b>Outcome 2</b>: Forest Carbon Inventory in West Africa supported</p> <p>UNFCCC Decision 4/CP.15 recommends that Parties should establish a robust and transparent national forest monitoring systems using a combination of remote sensing and ground-based forest carbon inventory approaches, and monitoring systems that provide transparent, consistent and accurate GHG emission estimates with reduced uncertainties.</p> <p>The outputs of this proposal will contribute to the partial achievement of the above recommendation, and will contribute to the objectives of the UN REDD Programme.</p>
<b>Total amount requested (US\$)</b>	<b>162000 USD</b>
<b>Related Work Area as defined in the UN-REDD Programme Strategy 2011-2015</b>	<b>Monitoring, Reporting and Verification (MRV)</b>
<b>Planned period of implementation</b>	Within 12 months
<b>Please select below type of funding as appropriate [Type(s) of Targeted Support - Please select as appropriate ]</b>	
<input type="checkbox"/> Funding for REDD + activities implemented at the national level in support of existing UN-REDD National Programmes	
<input checked="" type="checkbox"/> Funding for REDD+ activities complementary to other nationally-defined REDD+ activities (national strategies, RPP and/or bilaterally funded REDD+ activities)	
<input checked="" type="checkbox"/> Funding to support national counterparts in REDD+ partner countries to participate in capacity building that will benefit the implementation of national REDD+ activities	

## Introduction/Background

Several countries, including those from West Africa have shown interest and willingness to reduce and avoid further CO<sub>2</sub> emissions via sustainable forest management and conservation approaches. However, these commitments of emissions need to be backed by appropriate quantitative and scientifically verifiable methods.

Forest monitoring, and measurement, reporting and verification (M&MRV) is a core component for the REDD+ performance-based assessment for incentives rewards. The main pillars or building blocks for this system includes a satellite monitoring system to estimate changes in and use/land cover change and a ground-based forest inventory and monitoring system.

It also requires the establishment/development of a reference emission levels or reference levels, which serve as benchmarks for assessing each country's performance in implementing the REDD+ activities (Durban Decision 12/CP.17, paragraphs 7-15). UNFCCC Decision 4/15 on "Methodological guidance to REDD+ Strategy" specifically recommends that Parties should establish a robust and transparent national forest monitoring systems using a combination of remote sensing and ground-based forest carbon inventory approaches, and monitoring systems that provide transparent, consistent and accurate estimates (GHG emissions) with reduced uncertainties.

Unfortunately, most West African countries currently lack good quality datasets to establish baselines/reference levels for forest/land use change estimates and GHG emissions. Few African countries have undertaken complete national forest inventories, and where this was done, only the so-called "desirable" or commercial species were addressed in the inventory and measurements were usually undertaken down to minimum diameter limits of 30 cm or 20 cm, whereas forest carbon inventories involves all species and trees with diameter as low as 5 cm are measured, and a better picture of forest biodiversity is assessed.

Moreover, most of the inventories have been a one-off activity that provides only a static picture of forest resources at a point in time, whereas forest carbon monitoring requires repeated measurements on permanent sample plots. The "Stock-Change Method" recommended by IPCC requires at least carbon estimates at two occasions. Another problem is that the data collected may not have been well archived and databases are lacking. Generally the human capacity in data collection, data management and data processing is lacking or weak. Furthermore, there is a deficiency of allometric equations (volume and biomass equations) for most African/West African species (Henry 2010), and a great dependency on default pan-tropical equations (e.g. Chaves et al, Brown et al.) that were developed based on datasets from elsewhere (Latin/South America and Asia); hence there is high uncertainty in the estimates obtained. Databases for wood density exist but little is known of their origins from Africa as well as their precision (high level of uncertainty). In this regard, a regional technical workshop on tree volume and biomass equations in West Africa will be held in August 2014 with the support of the FAO, in order to identify gaps and information needs to support the development of guidelines and technical requirements for tree volume, biomass and carbon assessment in West Africa.

Similarly, there is also a paucity of forest land use and land use change data to estimate activity data, and no land use change monitoring systems exist in the sub-region. The sparse datasets existing suffer from inconsistencies between periods, and such historical data may not be useful in establishing baselines for forest land use monitoring. Furthermore the people have limited capacity to undertake image processing and interpretation of spatial satellite imagery for land use change studies. It is worth mentioning that some pipeline projects on forest satellite monitoring systems for West Africa, including, GEOFORAFRI ([www.geoforafri.org](http://www.geoforafri.org)) and ReCaREDD project.

Due to lack of accurate inventory and land use data sets, West African countries continue to produce National Communications using default IPCC values (Tier 1). While countries are encouraged to progressively improve on these estimates, by setting up national forest monitoring and MRV systems, it is worth noting that this could be an expensive undertaking, especially to some low forest cover countries in West Africa.

Joint regional efforts can be a cost-effective method for implementing capacity building on MRV, and can also help harmonize standards for some technical issues, minimize leakage; and ensure strong coordination amongst countries in the sub-region towards shared objectives in REDD+. Finally, a regional approach can provide a stronger mitigation impact, given the global nature of climate change.

### Rationale for a Regional Approach

There are some justifications/rationale for adopting a regional approach to forest monitoring and MRV in West Africa. Countries in the sub-region have recognized the benefits of a regional approach and agreed to submit a joint (regional) needs assessment for REDD+ MRV. Countries in the sub-region portray similar ecological characteristics, as ecosystems transcend country boundaries. Further motivation also comes from encouraging results from on-going regional forest monitoring and MRV in the Congo Basin by COMIFAC (e.g. the World Bank GEF Project and the FAO AfDB Project on REDD+ MRV) and the SADC (South African Development Community) Regional MRV Initiative African Development Community), as well as Southeast Asia (e.g. Asia Regional REDD Program Planning Assessment Report by Flaming and Stanley, USAID-ASIA).

Forest carbon monitoring was also identified during a recent Regional Workshop in Kumasi, Ghana (3-5 June 2014) by six West African Countries (Benin, Togo, Ghana, Côte d'Ivoire, Liberia, and Guinea Conakry) as important areas of focus at regional level, and advocated for a regional approach towards forest carbon and biodiversity monitoring.

The ECOWAS' *Forest Convergence Plan* for sustainable forest management and utilization also has as goal to strengthen cooperation and harmonization of approaches for addressing a variety of forest ecosystem issues regionally (through *Priority Intervention Areas: PIAs*) across the 15 West African States.

## Objectives

The main aim of the TS is enhance capacities, information sharing and regional cooperation on biomass and carbon estimates in West Africa. In line with the regional needs assessment for West Africa; and given the regional technical workshop to be held in August 2014 to identify knowledge gaps and needs on tree biomass equations, the present TS will draw on these activities; and will focus on the design of a regional ground-based forest carbon inventory and monitoring to improve emission factor estimations. Detailed outputs and activities are presented in the workplan and budget section.

### Broad Criteria for Targeted Support: briefly describe

#### 1. How is this targeted support consistent with the objectives of the UN-REDD Programme?

**The objective of the UN-REDD 2011-2015 PROGRAMME is:**

*To promote the elaboration and implementation of National REDD+ Strategies to achieve REDD+ readiness, including the transformation of land use and sustainable forest management and performance-based payments.*

Countries wishing to undertake the REDD+ Readiness activities are requested to develop national REDD+ strategies or action plans, to design and implement robust and transparent national forest monitoring systems for monitoring and reporting on REDD+ activities, to develop national forest emissions levels or forest reference levels, and systems to ensure that safeguards are addressed and respected. The Cancun Agreements (2010) affirms that results-based or performance-based REDD+ actions must be fully measurable, reportable and verifiable. Furthermore, the Warsaw framework requires forest monitoring, MRV and determination of reference emission levels. Forest monitoring, MRV, and reference levels are integral parts of the REDD+ strategy; and one of the main pillars of forest monitoring and MRV is forest inventory. Thus, this targeted support that intends to strengthen regional capacity in forest inventory is consistent with the objectives of UN-REDD Programme, the Cancun Agreements and Warsaw framework.

#### 2. What is the expected contribution of this targeted support to national REDD+ efforts?

As was detailed in the background section, most countries lack national forest inventories and where some have been undertaken, they were a one-off activity whereas forest carbon monitoring requires repeated measurements on permanent sample plots. Furthermore, there is a deficiency of allometric equations (volume and biomass equations) for most African/West African species (Henry 2010), and a great dependency on default pan-tropical equations (e.g. Chaves et al, Brown et al.) that were developed based on datasets from elsewhere (Latin/South America and Asia); hence there is high uncertainty in the estimates obtained. Databases for wood density exist but little is known of their origins from Africa as well as their precision (high level of uncertainty). Another problem is that the data collected may not have been well archived and databases are lacking. Generally the human capacity in data collection, data management and data processing is lacking or weak.

The TS will therefore help to address issues the above issues. More specifically, the TS will help contribute to the development of field measurement methods on forest carbon assessment to support REDD+ activities, that are key to assess forest carbon (Activity 1.2.2); to the provision of technical support to countries on MRV and monitoring as well as facilitating exchange of experiences between countries (Output 1.3); and especially in the development of robust and transparent national forest monitoring systems for the MRV (Activity 1.3.1). It will also provide training on the development of methods for national forest carbon inventories, and databases for forest resource information systems.

### **3. How is it aligned with the agencies' programming priorities for the relevant work areas?**

FAO leads the Work Area 1 on forest monitoring and MRV and has extensive experience for several decades in supporting the design and implementation of National Forest Monitoring and Assessment (NFMA) processes and the Global Forest Resources Assessments (FRA). Forest carbon monitoring and MRV builds upon these assessment methods and experiences in many countries, while adjusting to meet UNFCCC requirements. The proposed activities in the TS are therefore in agreement, and align well with FAO's priorities for this work area.

### **4. Proposed Outputs and Activities**

#### **Outcome 1: Enhanced regional cooperation and capacities on NFMS, MRV and data sharing**

##### **Output 1.1. Regional training on data analysis and tree biomass assessment implemented**

To bring together experts and representatives from West Africa UN-REDD Partner countries (**Benin, Côte d'Ivoire, Ghana, Guinea Bissau, Liberia, Nigeria and Togo**) and a handful of other relevant countries<sup>1</sup> from the region (Burkina Faso, Gambia, Guinea Conakry, Niger, Senegal and Sierra Leone) to develop common face-to-face opportunities to share knowledge on forest biomass assessment, to provide information and documentation and to transfer knowledge on database management, programming, data analysis to technicians from participating countries. The training will involve the teaching and development of different statistical methodologies potentially involved in forestry statistics for the calculation of aboveground biomass assessments. Exercises will involve the identification of measures of uncertainty, analysis of variance with particular focus towards stratification, and the development of allometric equations with different sources of data. This training will mainly focus on aboveground biomass. Data sources from West African countries are highly preferable.

##### **Output 1.2. West African Network on Forest biomass assessment created**

One of the main needs identified during the regional workshop in West Africa is the creation of a regional network of experts to support knowledge transfer, data sharing and support

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<sup>1</sup>The involvement of Non Partner Countries is to strengthen regional collaboration in cross-cutting issues forest monitoring and MRV

regional initiatives to assess tree and forest volume and biomass. Many countries in the region do not have the technical, financial and human resources to maintain sustainable forest monitoring systems. Regional collaboration would largely contribute to improve the assessment of forest resources and robustness of estimates. Focal points will be identified in each country contributing to this network.

### **Output1.3. A Web-platform to support knowledge exchange in West Africa Developed**

In close link with the UN-REDD website, a web-platform to support knowledge exchange in West Africa will be created. The web-platform will include the following functionalities: (1) contacts of the focal points for each country and each tree biomass-related project, (2) access to the updated database, (3) link with Globalometree database to ensure consistency of data provided, (4) access to references of document and literature related to forest biomass assessment in West African forests.

### **Outcome 2: Forest Carbon Inventory in West Africa supported**

#### **Output2.1. Regional database on permanent sample plots, tree allometric equations, wood density, volume tables, soil organic carbon and carbon fraction updated**

Several national and regional initiatives are collecting data from permanent sample plots such as CILSS in Niger, Burkina Faso and Niger, FOGIR in Ghana, etc. Data from permanent sample plots can be very useful to assess the dynamics of forest and particularly when using a gain-loss method. The database for volume and biomass allometric equations for West Africa available on Globalometree is incomplete because it is based on the article of Henry, et al. 2011, considers only allometric equations and several documents were recently published on tree biomass assessment in West Africa. Under this activity the database will be updated and include other variables such as wood density, biomass expansion factors, soil organic carbon and carbon fraction.

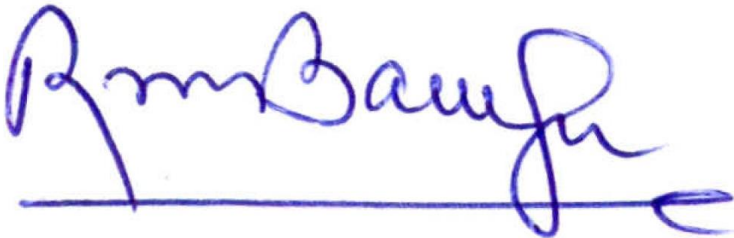
#### **Output2.2. Manual to support field measurements developed**

One of the major problems to ensure the comparability of estimates is the consistency of the field measurement protocols. Indeed, there is no standard or agreed protocol and each researcher or technician develop his own. In addition, a field measurement protocol would be very helpful to support capacity building activities, particularly for students. Ci-Fuentes, Henry et al. (2014) identified several recommendations to ensure comparability of estimates. Those recommendations would be considered to support the development of a field measurement protocol in West Africa.

## Summary Budget

Description of planned outcomes, outputs and activities		Amount (US\$)	Implementation period	
Results	Indicative Activities for each Output		From	To
<b>Output 1</b> : Enhanced regional cooperation and capacities on NFMS, MRV and data sharing	Activity 1.1. Regional workshop on data analysis and tree biomass assessment implemented	42,800	01/02/2014	01/06/2014
	Activity 1.2. West African Network on Forest biomass assessment created	21,900	01/02/2014	01/07/2014
	Activity 1.3. A Web-platform to support knowledge exchange in West Africa Developed	11,900	01/04/2014	01/07/2014
	Activity 1.4. Regional workshop on Permanent Sample plots	42,800	01/05/2014	01/07/2014
<b>Output 2:</b>	Activity 2.1. Regional database on permanent sample plots, tree allometric equations, wood density, volume tables, soil organic carbon and carbon fraction updated	14,000	01/02/2014	01/03/2014
Output 2: Forest Carbon Inventory in West Africa supported	Activity 2.2. Manual to support field measurement protocol developed	28,600	01/05/2014	01/07/2014
<b>Total amount requested (US\$)</b>			<b>162,000 USD</b>	

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<b>Signature</b>	

**Annex1:**List of National REDD Focal Points who have sent confirmation of their Countries to be part of the Targeted Support submission to UN REDD Secretariat for Support to National Forest Monitoring System for West Africa

S/N	Country	Name	Function/Title	Address	Email/Telephone
1	Benin	Ahononga Fia			<a href="mailto:boladefi@yahoo.fr">boladefi@yahoo.fr</a>
2	Burkina Faso	Sia COULIBALY	Coordonnateur National, Projet BKF/015 "Second Inventaire Forestier National", Burkina Faso		<a href="mailto:coulibalys@hotmail.com">coulibalys@hotmail.com</a>
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		Bubacar Jallow	Principal Climate Change Officer		<a href="mailto:bubazj@gmail.com">bubazj@gmail.com</a>
5	Ghana	Robert K. Bamfo	Head, Climate Change & REDD+	Forestry Commission	<a href="mailto:bamforobert@yahoo.com">bamforobert@yahoo.com</a>



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