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FROM THE AMERICAN PEOPLE

Global Climate Change: Carbon Reporting Initiative

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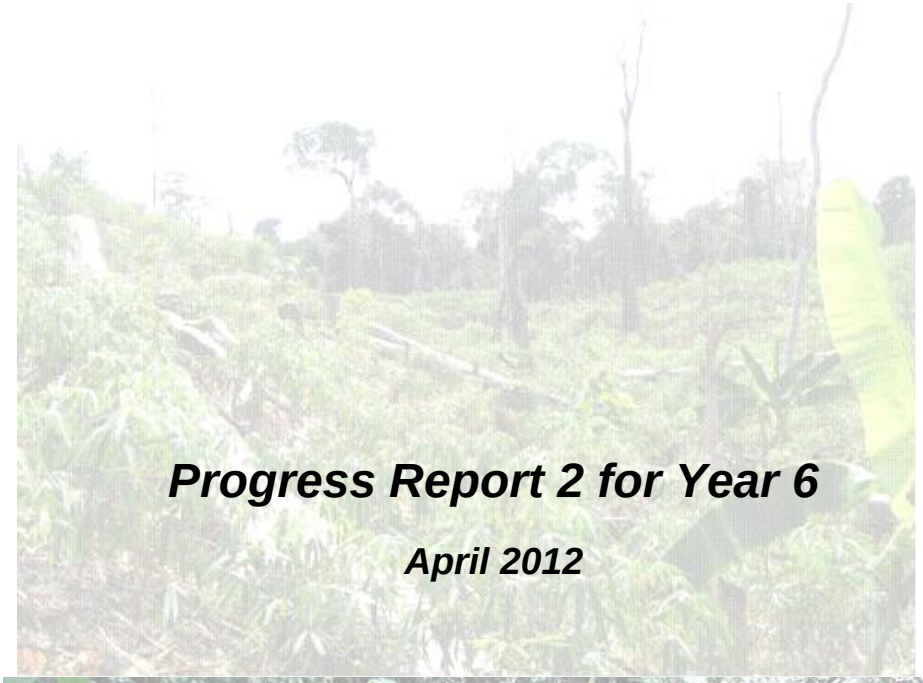

Progress Report 2 for Year 6

April 2012

WINROCK INTERNATIONAL

Putting Ideas to Work

1. Background

The main objective of the proposed work was to expand the ability of USAID to report global climate change impacts for forest-based activities by developing and implementing a set of innovative tools with high scientific integrity. USAID-sponsored land use and forest land management activities worldwide have direct, significant, and positive impacts on the climate. Although the impact of these activities is real, projects have not had the ability or tools to translate this impact into reportable, quantifiable measures of avoided emissions or sequestered carbon.

Under Year 6 of the cooperative agreement, we will continue to improve the AFOLU carbon calculator (ACC) by adding in updated data sets, adding in extra calculator modules, improving the user interface, allowing for different levels of control by administrators, improving the reporting capability across all projects entered into calculator, developing a stand-alone planning tool that can estimate emission reductions or enhancement of removals of carbon over multiple years, and implementing training workshops and training videos. The tool will continue to be simple and easy to use, and will allow the GCC Team and local missions and other stakeholders around the world to increase confidence in the integrity of results.

2. Activities for Year 6

Task 1: Develop a detailed workplan for year 6

Completed

Sub-Task 1a. Data collection for emission factors

Literature reviews have been conducted to identify new spatial and non-spatial datasets that can be used to improve the USAID tool. Several spatial and literature resources were identified that are appropriate for or are potentially appropriate for use with the ACC and are described in more detail below.

Carbon Stocks

Mangroves

A literature review was conducted to identify additional sources of information, both spatial and non-spatial pertaining specifically to improving carbon stock and deforestation estimates in mangrove forests. Recently several spatial analysis products became available better detailing the spatial extent and biophysical characteristics of mangroves. Additionally, new literature values of biophysical characteristics of mangroves became available for Micronesia. Winrock is in the process of obtaining these new spatial datasets, and has updated current tabular databases with new literature values of biophysical characteristics, to improve upon the current mangrove database used in the AFOLU Carbon Calculator.

Stratifying mangrove regions by biomass: A new spatial product defining the spatial extent and general biomass characteristics of mangroves was recently produced using ALOS PALSAR data (Lucas, 2012)[1]. Existing regional (e.g. Queensland herbarium Regional Ecosystem Mapping) and global data (e.g. World Conservation Monitoring Center and USGS/NASA) were used to map spatial extent. RADAR data was used to categorize the mangroves into regions of low and high biomass, and with and without prop root systems. Changes in mangrove spatial extent were mapped for the Atlantic

[1] Lucas, R. 2012, K&C Science Report-Phase 2 Characterisation and Monitoring of Mangroves Using ALOS PALSAR data. Available online at: (http://www.eorc.jaxa.jp/ALOS/en/kyoto/phase_2/KC-Phase-2_report_Lucas_Mangroves_V3_small.pdf).

coast of South America, southeast and mainland Asia, northern Australia and Belize. Hotspots of mangrove loss were identified in Southeast Asia, primarily in the northern Tawa Islands and northeast Borneo. Winrock will be obtaining results of this study to update the mangrove database used in the AFOLU Carbon Calculator.

Spatial datasets of mangrove characteristics: Winrock will be obtaining spatial databases of mangrove spatial extent, afforestation/reforestation/deforestation and growth rate for currently processed regions (portions of Asia, South America, and Africa) by the USGS to improve the current mangrove database (Giri et al, 2011)[2]. The global spatial extent of mangroves is currently available online through UNEP, however the additional products related to change detection and growth rate are not yet publicly available.

Updated biomass statistics for Micronesia: In addition to the spatial analyses, scientific literature values of mangrove biophysical characteristics (above-and below-ground biomass, total carbon) were added to the current database for Micronesia based on field analyses conducted by Kauffman et al (2011)[3].

Agroforestry Systems

The Agroforestry data had not been updated since its development in 2008, and significant new information has been published on this topic over the past few years. As such, carbon accumulation rates in agroforestry systems were identified as one of the main data gaps within the AFOLU Carbon Calculator. Two renowned agroforestry experts have been contracted to help Winrock expand the data base. The consultancy also aims at reviewing the methods used in the Agroforestry Tool and allowing users to insert more complete set of data into level B of the Tool.

Selective Logging Timber Extraction Rates

Timber extraction rates through selective logging, whether reduced impact logging (RIL) or conventional logging, consist on a major data gap. Currently the AFOLU Carbon Calculator uses an estimate produced by FAO (1990)[4] that has not been updated ever since. Currently no global database exists that reports average timber extraction rates per country. As such Winrock is identifying consultants who are experts in tropical selective logging to collect and compile such data for a few select countries where consultants may have experience and extensive network in. To date we have had difficulty in identifying consultants to perform the scope of work required (contacted several sources including Tropical Timber Foundation, ITTO). Winrock is still pursuing this effort, and have started looking for alternative routes such as contacting logging companies directly with whom we have had experience (i.e. Congolese Industrielle du Bois in the Republic of Congo), Lee White in Gabon, and contacts in SE Asia through the Winrock USAID- LEAF project (Malaysia, PNG, Laos, Vietnam).

Secondary Forests

Winrock has been conducting a search and review of the literature on biomass accumulation rates of tropical secondary forests. The information gathered in the literature review will be compiled into the database for further application in the Forest Restoration/Plantation Tool. So far we have identified about 25 -30 new sources and the data are being extracted and entered into excel spreadsheets. We expect to use the data to develop equations based on Chapman-Richards model of rates of carbon accumulation for different climate types and geographical regions of the ACC.

[2] Giri, C. et al. 2011. Status and distribution of mangrove forests of the world using earth observation satellite data, Global Ecology and Biogeography, 20, 154-159.
[3] Kauffman, J.B., et al, 2011. Ecosystem Carbon Stocks of Micronesian Mangrove Forests, Wetlands, 31, 343-352. DOI:10.1007/s13157-011-0148-9.
[4] FAO. 1993. Forest resources assessment 1990. FAO Forestry Paper 112, pp.59.

Additional datasets

We have identified the Global Agro-Ecological Zones (GAEZ) web site[5] as a data repository for potential use for the ACC. The Global Agro-Ecological Zones have been developed for more than 30 years by the International Institute for Applied Systems Analysis (IIASA) and the Food and Agriculture Organization of the United Nations (FAO). The published statistics and spatial data assessed the global agricultural resources and potential, focusing on land and soil resources, agro-climatic resources, agriculture suitability and potential yields under different management levels and actual yield and production. We are currently looking at the statistics and spatial data available by the GAEZ portal to see whether we can incorporate them into the agriculture tool for ACC.

Sub-Task 1b. Updating national data sets.

A consultancy has been established with Dr. Sassan Saatchi and work is under way to update the forest carbon stock map.

Sub-Task 1c. Refining estimates of deforestation rates.

Winrock has reviewed new tools reporting on deforestation, including the Forest Monitoring for Action (FORMA). The outputs from FORMA system were reviewed to determine their relevance for inclusion in the Carbon calculator. The FORMA is a semi-trained learning algorithm, which relies on thermal anomaly, NDVI time-series data from MODIS for each pixel and observed forest clearing between 2000 and 2005 (Hansen, et al. (2008)) to estimate the maximum probability of forest clearing per month, for each pixel that registered above 50% forest cover between December 2005 and October 2009. Once a pixel registers a certain probability of deforestation, pixel values will not decrease to allow the display of cumulative deforestation activity. However, if signals in the data become stronger over time, their probabilities increase. The pixel values are normalized to range from 0 to 100, but a value of 100 does not imply absolute certainty; rather, it signifies the strongest signal of forest clearing. Given the fact that FORMA system reports probability values of forest clearing per a pixel instead of area, we concluded that it is unsuitable for updating the ACC. As such, Winrock decided to refine and update deforestation estimates by consulting with Applied GeoSolutions (AGS), and such a consultancy agreement to update the deforestation rates to cover the period 2005-2010 in underway.

Task 2: Build and test tools

Subtask 2a. Modification of the forest management tool

No change from progress report 1 submitted in January, 2012.

Subtask 2b. Adding capability to add geographic specific details

The scope of work has been refined and circulated and is now in place with the new web developer Applied GeoSolutions.

Subtask 2c. Add an effectiveness calculation component

The effectiveness rating in Level A of the ACC is a measure of the success of project activities in achieving their aims and successfully preventing carbon emissions or ensuring carbon removals from land use and land use change. For example, an avoided deforestation project is considered to be 100% effective if it successfully prevents 100% of the deforestation in the project area, in effect reducing the rate of deforestation in the project area to zero and avoiding 100% of baseline emissions from deforestation. Therefore, the estimate of the quantity of credits generated by a project is significantly impacted by the user-approximated effectiveness of the project activity.

[5] http://www.iiasa.ac.at/Research/LUC/GAEZv3.0/

Previously minimal guidance was provided to the user regarding the determination of the effectiveness rating and thus the effectiveness rating applied by users was largely subjective. To address this perceived weakness, decision assessments have been developed to provide explicit guidelines for calculating the effectiveness rating for avoided deforestation and afforestation/reforestation activities. The assessments are flowcharts guiding the user to select a score for each factor considered by the tool to calculate an overall effectiveness rating based on the implementation of critical measures to stop deforestation in the case of the forest protection tool or mitigate threats to plantation survival in the afforestation and agroforestry tool. There is no project effectiveness for the forest management, cropland, or grazing land tools – these activities are either implemented or not implemented rather than there being a scale of success in terms of degree of implementation.

Winrock reviewed recent and ongoing USAID projects aimed at stopping deforestation to identify the main drivers addressed and measures implemented to address them. We determined that globally, USAID country missions and partner organizations implement projects to address deforestation resulting from one or more of the following drivers:

- unclear or insecure land tenure/land use rights,
- inadequate enforcement of applicable laws, and
- lack of alternative economic opportunities leading to exploitation of forest resources and conversion of forest to other uses by local populations and migrants.

However, forest protection projects implement measures at different levels to address these issues depending on the aims of the project. Projects aimed at protecting discrete areas of forest implement measures to address these issues at the local level. Primary measures implemented by USAID projects to address these drivers at the local level are assistance to individuals and communities to secure legal land tenure and land rights, capacity building for local groups to improve forest monitoring and enforcement of forest protection laws, and development of targeted alternative livelihood programs to reduce pressure on forest resources.

The outcome of this work is in report format. The report has been produced and is currently under review by the Winrock project staff. After this round of review, the report will be submitted to external peer reviewers. After receiving and addressing comments of reviewers, the concept will be developed into a wed based tool to replace the current effectiveness rating methods used under the Calculator.

Subtask 2d. Policy and capacity building impacts

No progress to report.

Subtask 2e. Develop a new bioenergy and land use tool.

No further progress since Progress Report 1 for year 6

Task 3. Train USAID GCC Team and mission staff (extension of Task 9 of Year 5)

In February of 2012 a total of 13 staff members from the USAID LEAF project, including 6 women, were trained in a day session in Bangkok.

Task 4. Complete outstanding Tasks from Year 5.

No change since Progress Report 1 for Year 6

Task 5: Management and implementation

Subtask 5b. Host website.

The current version of the AFOLU Carbon Calculator will be hosted by DRG until the end of Year 6 (2011/2012 fiscal year). We have already engaged a new web developer that is improving the features and navigability within the AFOLU Carbon Calculator that will also host the tool for Years 7-8.

Subtask 5c. Production of progress reports.

This document represents the second of four progress reports to be delivered to USAID during Year 6.

For more information or comments:

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