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USAID
FROM THE AMERICAN PEOPLE

**Global Climate Change:
Carbon Reporting Initiative**

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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 5 of the cooperative agreement, we will continue to improve the carbon calculator tool 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 5

Note: Progress on each task is reported in **bold, italic, green** text below.

Task 1: Develop a detailed workplan for year 5

The final Year 5 workplan and budget were submitted to Patrick Smith on January 24, 2011.

Task 2. Addition of features to existing calculator.

In Year 5, the existing calculator will be modified to add features that will improve the functionality of the tools. These modifications will include:

- a. Add in FY2011-FY2015 as an option for reporting. ***Future fiscal years have been added into the current version of the calculator.***
- b. Add documentation links so that they are available on all pages of each calculator. ***Guidance documents have been added to all pages of the calculator, including introductory page.***
- c. Add 'forgot username and password' option to login screen so that users can provide their email address and they are automatically sent their registration information. ***User password resetting as well as 'remember me' feature has been added to log in page. Username has been replaced by user's email, thus avoiding the mishap of users forgetting their usernames.***
- d. Add in 'fuelwood collection' as a Level B 'protection against' option in the Forest Protection calculator. ***Based on discussions with Patrick Smith on February 17, 2011, the workplan has been modified to exclude this task. This was done because the current version of the calculator already includes an option to report offtake for community logging, so this function can also be used to include offtake from fuelwood collection. The wording in the forest protection calculator will be modified to reflect this change. Removing this task was part of an effort to free up resources to allow an improvement upon the calculator's interface as described in Task 3 below.***
- e. Update summary page to display separation of live biomass vs. soil. ***In the updated version of the tool benefits are separated by activity type and location (admin unit) but not by carbon pool.***

In addition to the items above, an additional task has been focused on user management, which is a function that was added into the existing calculator during Year 4. After registering, a user can enter and save project information. The project is then saved into a main group of projects until the group administrator adds the user/project to a specific group. This function was designed to allow USAID staff to see and modify only the projects that they are involved with. Project descriptions as well as the geographic information entered about projects by specific users are being used to assign users into regional groups. This has been completed (March 2011).

Task 3: Allow two or more projects of the same type to be entered for the same administrative unit

The tool will be re-structured to improve the functionality and interface of the existing calculator. This will include a programmed solution that allows users to derive carbon benefits for one project that is implementing multiple activities of the same type in the same administrative unit.

Task 3 involved a major paradigm switch in the way the application works, but resulted in significant beneficial improvements in the long run and in a much cleaner, easy-to-use user interface. Although this task required significant resources to implement, the calculator now functions more efficiently and, from a maintenance perspective, the effort to modify calculators in the future has been simplified and costs therefore reduced. Because the database has evolved over the past five years as the calculator has been developed, the user interface was no longer ideal and it was agreed beneficial between Winrock and USAID team to redesign it for better support USAID's requirements.

The changes updating the calculator allow users to enter information in a more piecemeal fashion, where a single project type and admin unit is selected, data are entered for that particular admin unit/activity, and information is saved. The user is then given the opportunity to move on and add additional admin units and/or project activities. In this way, the data entry is divided into manageable stages (with data saved in between). Projects that have not been completed may be saved as 'incomplete'. Incomplete projects do not display benefits estimation until project is saved as complete. An additional benefit to the new interface design is that users are allowed to enter multiple project activities of the same type for a single administrative unit if desired.

The approach of using the 'shopping cart' concept was maintained in the new interface, but with significant improvements in the user's navigability through the calculator. Projects already created are summarized in a dashboard and all entered projects are visible at all times in the left side of the screen of the users. Users are allowed to revisit projects entered and modify data in a more navigable and intuitive manner. Benefits reporting have also been improved and include graphical as well as tabular display in the updated version of the calculator in addition to allowing users to export pdf documents summarizing the results.

The updated calculator was designed in a way that allows Winrock to include new databases directly into the calculator with no assistance from the expert programming technician from DRG. The new calculator also allows easy addition of new tools as they are developed (i.e. agricultural management and grazing management tools).

The upcoming planning tool currently in development will be fully integrated with the existing calculator, so that the tools will complement each other.

Task 4: Develop project planning tool

During Year 3, several presentations were given to DC-based organizations on the details of the Forest Carbon Calculator. At these meetings and within USAID, there was considerable interest in a “planning tool” to help Mission staff evaluate which project types are most beneficial from a carbon perspective on both short and long timeframes. In December 2010, another workshop was held to solicit feedback on the structure and design of the planning tool. Based on partner feedback, the planning tool will produce estimates of up to 30 year projections, rather than limiting estimates to annual benefits (as in the current version of the tool) so that users can make strategic decisions about which regions, and which activities within those regions, might have the potential to generate the largest carbon benefits.

The specific steps are:

1. Develop draft planning tool to estimate benefits for a period of 30 years that has a scenario-based, user-friendly interface. *A programmed version of the planning tool has been implemented to show benefits for current and future years.*
2. Re-engage key stakeholders to solicit feedback on draft planning tool to allow modifications as necessary. *This workshop has not been scheduled to date.*
3. Incorporate into the planning tool indicators of threat of land use change and potential for alternative land uses that relate to other sectors – could include data layers related to infrastructure, population density, crop suitability, etc. *This sub-task was not completed due to prioritization of other tasks.*

Task 5: Create new agricultural land management and grazing land management tools

During year 5, the calculator will be expanded to include **agricultural and grazing activities** that increase soil carbon stocks and reduce emissions of non-CO₂ greenhouse gases.

The specific steps are:

1. Re-analyze the USAID project portfolio to assess what potential projects might be eligible under the agriculture and grazing land management calculator. *The USAID project portfolio was assessed briefly. Due to the relatively small number of projects, we developed the agricultural and grazing tool mainly along the lines of IPCC guidance.*
2. Review 2006 IPCC Guidelines for Agriculture, Forestry and Other Land Use (IPCC AFOLU) for calculating soil GHG emissions. *These Guidelines were reviewed and incorporated into the tools developed.*
3. Engage original developers of the IPCC soil default values to fill gaps in the data set and update values with the latest scientific knowledge. *We developed the tools using current IPCC soil default values; the original developers of these values have not been contacted.*
4. Develop methods for estimating reductions in CO₂, N₂O and CH₄ (expressed in CO₂ equivalents) from changing nutrient management practices. *Under agricultural activities tool, methods and calculations were developed for changing tillage practices and nutrient inputs and under the grazing management tool, methods and calculations were developed for the activities of improving grassland management, livestock management and rewetting organic soils.*
5. Produce documentation that describes the science behind the agricultural management tool, the equations used to estimate emissions expressed in original units as well as in CO₂ equivalents, and the sources of default data. *Documentation for both the agricultural and grazing land management tools has been developed.*
6. Submit documentation and calculator to at least two experts in emissions from agricultural soils and practices. Winrock will prepare a brief summary of the reviews (names of reviewers,

comments/issues raised, and their resolution). *These calculators have not been subject to peer review to date.*

Task 6: Add uncertainty values to summary page

The current version of the calculator derives a carbon benefit as a single value on the summary page, which is useful on its own but would be supplemented by an indication of its uncertainty. During Year 5, uncertainty will be built into the calculator equations.

The specific steps are:

1. Develop draft uncertainty default values for input parameters
2. Use IPCC error propagation techniques and/or Monte Carlo simulations to derive uncertainty values
3. Display uncertainty values on summary page

Based on discussions with Patrick Smith on February 17, 2011, the workplan has been modified to alter this task. This was done to free up resources that will allow an improvement to the calculator's interface as described in Task 3 above. Rather than developing quantitative uncertainty values in the tool, we discussed producing a guidance document that provides guidance on uncertainty issues in general and summarizes the main sources of error in the calculators. This has not been produced to date.

Task 7: Expand upon A/R tool

Currently the A/R calculator allows a user to select from among several plantation species as well as mangroves, bamboo, Acacia, and a "native species" option. The default values for native species are derived from IPCC default growth rates for <20 year old native forests. In Year 5, the species database will be expanded to include sequestration rates for specific tree species commonly planted or in naturally regenerated ecosystems. At a workshop held at Winrock in December 2010, a specific suggestion came from partners to include palm oil as a species option in the A/R tool. These data for will be compiled and synthesized from sources such as major bilateral donors, research institutions and literature review.

The specific steps are:

1. Review data that were used to derive IPCC default sequestration values for native species and increase level of documentation for how default values were derived. Supplement IPCC defaults with data for additional species where possible.

During the re-structuring of the calculator in Task 3 above, A/R default values were revisited and the database updated. Additional species were added to be selected by the user based on the geographic location of their project, which determines climatic zone and therefore which species will grow in the selected region. In addition to natural forest, a user can now select from various plantation species that vary by climatic zone.

Task 8. Host website for another year.

DRG will host the Forest Carbon Calculator website for Year 5 to facilitate the ongoing development and up-dating of the tool.

New calculator is online at: <http://winrock.stage.datarg.net/m3/CarbonReporting/Welcome>

Task 9. Develop guidance documents on data collection and processing for Level B data and conduct training seminars

In Year 5 under this task, guidelines and manuals will be prepared that outline minimum standards for generating and applying Level A and Level B data for each tool, as well as suggestions for design of data collection and processing systems such as systematic documentation of project locations and activity attributes in geospatial layers (need improved documentation of location and area of specific activities in AID projects).

The specific steps involved are:

1. Develop web-based training clips to guide users through the calculator functions. For example, a user can click on an icon to watch a video clip that explains what to look for and what to enter in a given Level A or B box. The calculator interface will also be updated to clarify what the minimum requirements of data input are and what users might need to do to generate a better Level B estimate. **No progress to report.**
2. Conduct three regional trainings on the use of the forest carbon calculator (Africa, Asia, Latin America). These would be two-day carbon estimation and monitoring workshops that present basic concepts of carbon measurement and accounting, walk users through how to use the calculator, and have users fill out the calculator with real data from their projects. **Trainings will include topics additional to calculator. Ideas being considered are: global climate change and forest carbon, REDD+, carbon stock assessment techniques. Further discussions and feedback are required from Patrick Smith and Evan Notman prior to establishing a training agenda. Preliminary plans are underway for 'Training of Trainers' in:**
 - a. **Latin-America in Lima, Peru. Evan Notman will coordinate with Patrick Smith the setting up of appropriate time and audience through reaching out to USAID ICAA program managers, such as Connie Campbell. Winrock is waiting feedback from Patrick Smith and Evan Notman to contact IRG and start defining logistics for appropriate topics.**
 - b. **Southeast Asia in Bangkok, Thailand. Sandra Brown presented the USAID tool during Winrock's training sessions under the USAID LEAF project in August 2011.**
 - c. **Africa in Nairobi, Kenya. The possibility to hold this training session in the Congo region (CARPE Project) was also discussed, although it seems Nairobi would be a preferred location. Patrick Smith had planned to reach out to the NASA-Servir program to identify potential benefits of conducting the training through partnering with the Servir program as they are active in south and east Africa.**

Task 10. Work with the National Inventory ALU tool developers to harmonize approaches.

The National Inventory ALU tool was funded by both EPA and USAID and functions as a calculator for national-scale carbon accounting (for national GHG inventories). Winrock will work with the developers of this tool to ensure that underlying equations and default data are consistent when both tools operate at a national scale.

The specific steps will include a meeting with the ALU developers to discuss the potential of nesting project- and subnational data generated by the Forest Carbon Calculator into a national inventory.

Products and dates

1. Consultations with EPA on the potential of nesting project- and subnational data; March 2011, July 2011 **No progress to report.**
2. An assessment of the potential to integrate the data bases and tools of the Forest Carbon Calculator into the ALU tool; September 2011 **No progress to report.**

Task 11: Production of progress reports

This document reflects the final progress report for Year 5.

For more information or comments:

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