

# The Carbon Institute's Program Performance Report

United States Forest Service Support for Terrestrial Carbon  
Accounting Academic Partnership in Cameroon

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For the Period February 1 to September 30, 2015

OCTOBER 2015



## 1. Work status and progress

From February 2, 2015 to September 30, 2015, the work under this grant has proceeded as originally conceived. The Carbon Institute leaders (John Niles and Anup Joshi), working with CRESA leaders (Francois Hiol Hiol and Jean Bell), we able to: conduct an extensive scoping trip, plan for a one week train the trainer terrestrial carbon accounting course, market the course, coordinate the course with key government agencies and personnel, run the course successfully in a team-teaching approach, and conduct evaluations of the training course.

Twenty-seven people took the entire 5-day course, and received Certificates of Completion. These 27 professionals are being offered follow up courses in Intergovernmental Panel on Climate Change (IPCC) courses, offered on-line through the Greenhouse Gas Management Institute, the parent organization of The Carbon Institute. The 40 hours of instruction were taught by John Niles and Anup Joshi, as well as Francois Hiol Hiol and Jean Bell. An additional 6 Cameroonian faculty members, all working professionals or university professors, also co-taught various subject modules. The course was opened and closed with a lecture and graduation speech from Dr. Joe Amougou, Cameroon’s focal point for the United Nations Framework Convention on Climate Change (UNFCCC).

Overall, evaluations of the five-day Terrestrial Carbon Accounting Course were very positive. Twenty-nine questions were asked, through confidential evaluations, immediately after the course was completed (and before graduation). On average, based on the Table below, course participants scored all aspects of the course with a ranking of 3.6 (between bien and tres bien). For various aggregated components (e.g., overall course evaluation, overall logistics, overall score for different teaching modules), scores ranged from a low of 3.1 for logistics, to a high of 4.2 for course facilitation. The highest single specific score (4.4) was given to the teaching by Dr. Amougou, and the lowest specific score for any question was for food (2.7). 100% of the participants would recommend the course for other professionals.

<b>A (scale: 0 to 5)</b>	Scoring Weights
Excellent	5
Tres bien	4
Bien	3
Assez bien	2
Passable	1
Mauvais	0



To review the main work status and work accomplished, we accomplished a successful scoping trip to Cameroon in June, 2015. The outcomes of the scoping trip informed the subsequent terrestrial Carbon Accounting class, offered on September 21-25, 2015 (held both in Yaounde and Mbalmayo, Cameroon). The scoping trip included the following activities:

### *1. University of Dschang, Dschang, Cameroon*

We visited The University of Dschang, June 12-13 and met with with Dr. J. Bell, Professor, CRESA (CENTRE REGIONAL D'ENSEIGNEMENT SPECIALISE EN AGRICULTURE FORÊT-BOIS). Dr. Bell teaches graduate courses, Environment Impact Assessment and Environmental Monitoring. On our way to the University of Dschang, we had a very good discussion on current academic capacity in Cameroon regarding meeting the requirements for performance based payments under REDD+. At Dschang, we were met by the Deputy Director of CRESA, Dr. Theophile Kamgaing. He introduced us to the rector of the University of Dschang, Dr. Anaclet Fomethé. Rector Fomethé is very positive in our collaboration. He would like to see his faculty trained and mentored by US universities. He suggested signing a MOU between the University of Dschang and the Carbon Institute or the University of California, San Diego for a long-term collaboration.

We met with DR. Marie-Louise Avana-Tientcheu, Senior Lecturer, University of Dschang. She was a former director of CRESA. During her tenure she developed a Master program in forestry and natural resources. She was very enthusiastic about our collaboration. She emphasized the necessity of developing skill sets for REDD+ and other UNFCCC negotiations in Cameroon and in the Congo basin. She would like to see our collaboration help CRESA develop and implement such courses. We had a very good meeting with Prof. Maurice Tsalefac, Dean of Forestry & Human Resources. Prof. Tsalefac has a broad vision for faculty and student development. He had worked for the European Union Economic Committee for Climate Change. He wanted to see mapping and GIS curriculum included in our training program. He wants to see more hands-on courses for capacity building than theory courses. We also had meetings with Professors Clement Tientchev and Lucie Temgoua. Dr. Clement teaches Human Resource and consulting. His goal is to train students to become consultants after they graduate. He is well connected and has very good networking skills. He is supportive of our project and is willing to co-teach with us. Dr. Temgoua is with the Department of Forestry and teaches silviculture and climate change. She is interested to be trained in carbon accounting so that she can teach those skills to her students.

### *2. University of Yaoundé*

We had a very productive meeting with Prof. Roger Ngoufo, Environmental Geography, University of Yaoundé. He also teaches Forest Dynamics and REDD+ at the Doula University. He has good knowledge on remote sensing, GIS and IPCC guidelines. He has published a few papers on forest measurements but lacks funding



to continue field work. He also works with two Counsel Forests lying between Yaoundé and Doula. He is enthusiastic on collaboration and co-teaching field measurements with us. He is well connected with local and international NGOs. Since the 1990s, he has been working with NGOs to halt illegal logging, wildlife poaching, trafficking, and bush meat trade in Cameroon.

### *3. CRESA*

We visited the CRESA office in Yaoundé. There, we had a very productive discussions with Dr. Francois Hiol Hiol, Director of CRESA, on current expertise and gaps in REDD+ implementation in general and terrestrial carbon accounting in particular. We also discussed a long-term academic partnership and potential funding sources. Dr. Hiol Hiol and Dr. Bell gave us a tour of the CRESA facilities. We also had an opportunity to talk to a few students in the Masters Program in Forestry and Natural Resources. On the second day Dr. Hiol Hiol organized a talk to interact with students. Anup Joshi gave a talk to Masters students at CRESA on REDD+ history, and opportunities and challenges on developing a baseline reference level for performance based payments. Dr. Bell helped by explaining some of the English terms in French to students and translating questions from students in French to English for Anup to keep discussions alive. The students were very interested in the topic and had a lot of questions. They are interested in participating in our training classes if they have an opportunity to do so.

We also discussed the training schedule, venue, and potential partners to co-teach. We thought mid-October would be a good time to run the course. Dr. Hiol Hiol suggested Sangmelima and Mbalmayo as two potential venues for running the training. They are outside Yaoundé, but easily accessible via car; they are also close to forested areas for field assignments.

### *4. Ministry of Environment*

Dr. Hiol Hiol introduced us to Dr. Wassouni, Coordinator for Cameroon's REDD+ National Strategy. Dr. Wassouni was very supportive of our program. He said Cameroon need lots of help in developing in-country capacity to implement REDD+ initiatives. Cameroon doesn't have very good or well-organized forest inventory data to generate carbon stocks. He hopes our training could lead to the generation of actual data that could be used for developing regional reference levels. He assured us that his office will help us to identify the right people for training. He specifically endorsed the idea of making the training programs highly-applied in the next year, to support Cameroon's UNFCCC and related work.

### *5. Higher Institute of Environmental Sciences*

We met with Dr. Zac Tchoundjeu, founder of Higher Institute of Environmental Sciences (HIES). The goal of HIES is to train and develop competent and skillful professionals in Agro Forestry, climate change, environmental Health science, and Environmental impact assessment. Dr. Tchoundjeu is also Regional Director for World Agroforestry Centre (ICRAFT). We discussed opportunities and gaps in



skilled manpower in Cameroon to support carbon accounting and other REDD+ activities. HIES is delivering courses in both Bachelors and Masters Programs in partnership with UCLA, Gent University, Yaoundé University and Dschang University. They have good class room facility with internet access. Dr. Zac is willing to collaborate with us and allow us to use his facility if needed.

#### *6. National School of Waters and Forests*

Dr. Hiol Hiol took us to National School of Waters and Forests in Mbalmayo, one of the two potential venues for field training part of our training program. Mr. Bernard Tieche, Senior Lecturer showed us the facility. They have experimental forest plots (planted forest) used for teaching. These plots could be used for field inventory for our training course. There are about 730 ha of natural forest adjacent to the experimental forest plots. They have all the necessary equipment for forest inventory. Mr. Bernard also showed us a computer lab with 22 computers with open sourced QGIS software. This computer lab will be good for the GIS and Remote Sensing part of the training. We also checked a hotel in Mbalmayo. The hotel has air-conditioned meeting halls and dining facilities in addition to lodging.

Following the scoping trip, CRESA and The Carbon Institute worked to build an appropriate 5-day Terrestrial Carbon Accounting course curriculum, and set of instructors from The Carbon Institute, CRESA, and other academics and professionals in Cameroon.

The curriculum of the Terrestrial Carbon Accounting course, included:

#### Monday September 21, 2015

- Introduction to UNFCCC and REDD+ Context – Niles & Bell
- Lunch speaker, Dr. Joseph Amogou, on REDD+ in Cameroon
- Travel to Mbalmayo

#### Tuesday September 22, 2015

- Introduction to Forest Carbon – Joshi & Bell
- Process overview for establishing baseline reference level (RL or REL) for REDD+ -Joshi & Bell & Niles
- Overview of GIS - Kah & Joshi
- QGIS overview and QGIS – Lab1 - getting data into QGIS – Joshi & Kah
- QGIS basic functions and Lab 2 - Understanding basic functions (tools) in QGIS

#### Wednesday September 23, 2015

- Forest Classification and the IPCC System – Niles & Joshi
- Introduction to Equipment - Tieche
- Forest measurement field training and Field data collection – Joshi, Tieche and Temgoua
- Data entry & analysis - Joshi and Bell

#### Thursday September 24, 2015



- Calculating carbon stocks & Emission factors from field measurements – Niles, Joshi, and Bell
- Brief overview of remote sensing, image processing and forest classification
- Hands-on training -Supervised classification using QGIS – Lab 3
- Classification of Mbalmayo satellite scenes
- Handouts: QGIS Lab 3 -Supervised-classification-Using-QGIS

Friday September 25, 2015

- Freely available forest cover data and forest classification for Cameroon - Joshi, Kah, Tieche
- Generating RL using Forest cover data from Global Forest Watch and default emission factors using IPCC values for Africa. – Niles, Joshi, Kah, Tieche
- Finalizing RLs, completing and communicating Terrestrial Carbon Accounting– Niles & Bell
- Closing ceremony and certificate distribution – Hiol Hiol, Niles, Joshi, Amougou, Kandem Toham, Amougou

The course curriculum and materials were developed based on the scoping trip, discussions with government officials, and based on the experience of previous Terrestrial Carbon Accounting courses, offered by The Carbon Institute. The course topics were presented in both English and French.

CRESA led the work on recruiting and marketing. They were able to successfully recruit 27 highly qualified professionals to attend the course. CRESA also was able, with the support of an additional USFS grant, able to plan and execute the logistics of the five day course.

Below we provide an update on the major objectives of the grant agreement.



<b>Objective</b>	<b>Progress</b>
<b>Objective 1: Scoping Trip</b>	<b>Complete</b>
<i>Task 1a: Determine pre-existing TCA related courses</i>	<i>Complete</i>
<i>Task 1b: Determine gaps in current TCA teaching</i>	<i>Complete</i>
<i>Task 1c: Identify Cameroon co-teachers</i>	<i>Complete</i>
<i>Task 1d: Determine place and time of training</i>	<i>Complete</i>
<b>Objective 2: Train-The-Trainer Terrestrial Carbon Accounting Course</b>	<b>Complete</b>
<i>Task 2a: Finalize curriculum and co-teachers</i>	<i>Complete</i>
<i>Task 2b: Invited participants, in conjunction with key government agencies</i>	<i>Complete</i>
<i>Task 2c: Finalize logistics</i>	<i>Complete</i>
<i>Task 2d: Conduct five-day TCA training</i>	<i>Complete</i>
<i>Task 2e: Complete post-learning evaluations</i>	<i>Complete</i>
<b>Objective 3: Mentoring</b>	<b>In progress</b>
<i>Task 3a: Offer course participants additional on-line training in IPCC methods for TCA</i>	<i>Complete</i>
<i>Task 3b: Identify additional faculty support needs for third trip</i>	<i>In progress</i>
<i>Task 3c: Carry out requested mentoring during third trip</i>	<i>Planning stages (likely January/February 2016)</i>

## 2. Difficulties encountered

We have not experienced any difficulties associated with the project cycle.

## 3. Preliminary results and outcomes

As of September 2015, the project has resulted in 1080 instruction hours (27 students times 40 hours of instruction per student). This has resulted in increasing the capacity of Cameroon professionals to teach Terrestrial Carbon Accounting (the train-the-trainer component). In addition, we have been able to provide numerous government and non-government officials with specific TCA instruction skills. Finally, we are preparing to offer all course participants up to an additional 40 hours of on-line instruction (per person) through the Greenhouse Gas Management Institute's courses on the Intergovernmental Panel in Climate Change (IPCC) methods for calculating greenhouse gas inventories.

We are also working in conjunction with CRESA to understand the main suggestions from the course evaluations. This will allow CRESA to better understand future TCA teaching needs and preferences. Finally, we continue to work with our Cameroon counterparts that helped teach the course, to provide them with additional mentoring and support so that they may continue to teach high-quality TCA in coming years.