

TC ABSTRACT

I. Basic Project Data

▪ Country/Region:	REGIONAL/IDB
▪ TC Name:	Regional Blue Carbon Monitoring, Reporting and Verification Mechanism
▪ TC Number:	RG-T3409
▪ Team Leader/Members:	ALLENG, GERARD P. (CSD/CCS) Team Leader; WATSON, GREGORY (CSD/CSD) Alternate Team Leader; GOMEZ, JUAN (CSD/CSD); CEVA, MARIANA (CSD/CCS); FLORES, ADRIAN (CSD/CCS); ESQUIVEL, MARICARMEN (CSD/CCS); DELGADO, C. RAUL (CSD/CCS); SANDOVAL PEDROZA, JOSE (CSD/CCS); LEFEVRE, BENOIT (CSD/CCS); SAMAYOA, JORGE (CSD/CCS); RAMSUMAIR-, PRIYA (CCB/CTT); ACEVEDO, DANIELA (LEG/SGO); VALENTINE, JEREMY (VPC/FMP); LOUIS, PAULA (VPC/FMP); LOPEZ, CARMEN (CID/CNI)
▪ Taxonomy:	Research and Dissemination
▪ Date of TC Abstract:	30 Mar 2021
▪ Beneficiary:	UK Blue Carbon Fund countries
▪ Executing Agency:	THE UNIVERSITY OF THE WEST INDIES
▪ IDB funding requested:	US\$996,000.00
▪ Local counterpart funding:	US\$140,000.00 (In Kind)
▪ Disbursement period:	60 months
▪ Types of consultants:	Individuals; Firms
▪ Prepared by Unit:	CSD/CCS - Climate Change
▪ Unit of Disbursement Responsibility:	CCB/CTT - Ctry Off Trinidad & Tobago
▪ TC included in Country Strategy:	Yes
▪ TC included in CPD:	No
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Environmental sustainability

II. Objective and Justification

- 2.1 The purpose of this Technical Cooperation (TC) is to implement a monitoring verification and reporting (MRV) system for mangrove ecosystems that provides a science-based data platform on the sequestration and release of blue carbon in participant countries. In 2019, the IDB, with support from the Department for Environment, Food and Rural Affairs (DEFRA), established the "UK Blue Carbon Fund" (the Fund) to finance projects that will help reduce climate change's negative impacts increasing carbon sequestration. The regional MRV is to be used to help monitor the progress of the projects that are to be implemented under the Fund. With this MRV system, the blue carbon projects of the Fund will be able to: (i) Improve the valuation of ecosystem services provided by mangrove ecosystems; (ii) Potentially include blue carbon data in the Nationally Determined Contributions (NDC), Reduced Emissions from Deforestation and Forest Degradation (REDD+) schemes, Sustainable Development Goals (SDG) programs, UNFCCC National Communications and carbon markets programs; (iii) Utilize an MRV system for results-based payments under a reforestation program. There is a growing trend to support or encourage results-based actions for reforestation, conservation, or reduced deforestation efforts. To effectively participate in or take advantage of these types of efforts, a key element of the results-based payment scheme will be a fully functional MRV.
- 2.2 The Regional MRV program will develop and implement a standardized MRV for the blue carbon captured in mangrove ecosystems for those LAC countries that are beneficiaries of the Fund, which will help the Bank report on its progress. Data collected from all projects in the blue carbon program will be used for reporting on the Fund. The various methodologies used by projects should be reviewed as inputs for the development of a broader monitoring methodology. This includes the use of models being used in Panama and methodologies in use in Colombia. Estimates from these projects can be compared to estimates prepared using the system developed in this project to review accuracy. This will be useful to countries as Article 5 1. of the Paris Agreement states "Parties

should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1 (d), of the Convention, including forests. As a result, the country and region-specific data availability has become necessary, especially in the context of mangrove systems because of the growing global trend to incorporate the blue carbon storage services of mangroves into aspects of (i) National Determined Contributions (NDCs) (it is estimated that at least 28 countries mention coastal wetlands including mangroves in terms of mitigation in their NDCs, in addition to those that reference adaptation); (ii) REDD+ schemes (e.g., Suriname includes mangroves in its forest reference emission level); (iii) carbon trading initiatives; (iv) SDGs, in particular, the attainment of SGD 14 - under the target of conserving by 2020 "at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information. The development of the regional MRV will indirectly contribute to building climate change resilience in the region by helping to increase the capacity to monitor the release and sequestration of blue carbon at project sites.

- 2.3 Data quantifying blue carbon ecosystems and their pools is scarce, especially data on whole-ecosystem storage capacity. Carbon storage capacity is being continuously released in the Caribbean because of land-use conversion. This trend can be reversed by developing mangrove restoration and conservation projects around the region. Currently, to obtain the data on mangrove sequestration, traditional methods typically consist of labor-intensive field collections, requiring the measurement of individual tree height and tree diameter at 1.3 meters over time. In mangrove forests, this is extremely challenging compared to other forest ecosystems because of the soft unconsolidated sediment and the intricate architecture of the mangrove forest landscape (i.e., aerial roots, prop roots, etc.). This project aims to overcome this challenge by utilizing innovative methodologies to measure biophysical parameters (e.g., tree height, crown diameters, diameter at breast height, etc.) utilizing satellite field measurements validation the different mangrove forest types. The measurements will distinguish between long standing mangrove forests versus reforested mangroves, to monitor and verify carbon storage across site locations. A unique aspect of this project is a non-destructive approach to digitally capture the volume and carbon storage of the red mangrove prop roots, which should increase the total measurement of carbon stored.

III. Description of Activities and Outputs

- 3.1 **Component 1. Development of standardized MRV system.** This will consist of (i) Assessment of monitoring and reporting protocols at project sites; (ii) Identification of baseline conditions as reference points, using existing project information where possible, to create or augment high resolution mangrove cover baseline maps; (iii) Determination of carbon stocks, using a 3D Imaging ground-based Laser Scanner and Python/Anaconda programming analysis; (iv) Establishment of standardized MRV protocol for reporting on results from project sites.
- 3.2 **Component 2. Institutional Capacity Building.** This will support: (i) Training of project management units and local partners/stakeholders from project sites. The training will be on use of innovative measurement methodology using Laser technology and programming code for carbon stock analysis; (ii) Preparation and publication of technical articles or reports on the methodology and recommendations on MRVs for mangrove forests; (iii) a joint regional paper on the comparison of technical attributes of UK Blue Carbon Fund project sites.
- 3.3 **Component 3. Knowledge development and dissemination.** This component will support (i) the development of a regional data and knowledge-sharing platform for all Fund project sites. The platform will be used to collate, analyze, and synthesize information for the reporting on the progress of the UK Blue Carbon Fund; (ii) Creation of a community of practice to share information and lessons across the project sites; (iii)

Dissemination of appropriate information and awareness campaign on the results of the various blue carbon projects.

- 3.4 **Component 4. Project Administration including project evaluation.** This component will support the cost toward the overall supervision and coordination of the project, as well as the project evaluation.

IV. Budget

Indicative Budget (US\$)

Activity/Component	IDB/Fund	Counterpart	Total
Development of standardized MRV system	376,000	100,000	476,000
Institutional Capacity Building	270,000	40,000	310,000
Knowledge development and dissemination	250,000	0	250,000
Project Administration including project evaluation	100,000	0	100,000
Total	996,000	140,000	1,136,000

V. Executing Agency and Execution Structure

- 5.1 This operation will be executed by the St. Augustine Center for Innovation and Entrepreneurship (STACIE), under the management of John Agard, Director of the Center and Professor of Tropical Island Ecology in the Department of Life Sciences, University of the West Indies (UWI). The execution period of the project will be five years as it will follow the implementation of the Blue Carbon projects being supported by the Fund. The implementation of the project will be the responsibility of STACIE, who will hire a project management unit to manage the program. The PMU will consist of a project manager, procurement officer and a finance and accounts officer. A technical advisory committee (TAC) will be established to help guide the project and will include representatives from the University of Cambridge Centre for Earth Observation (CEO), Anton de Kom University of Suriname and Universidad de los Andes Colombia (UNIANDES) and other technical experts. During the implementation of the project, the PMU will coordinate all activities with local IDB country offices facilitated through the involvement of CSD/CCS specialists in these country offices.
- 5.2 STACIE will collaborate with the University of Cambridge Centre for Earth Observation (CEO) to implement the project. CEO is a world-leading research center on the remote sensing of environmental change, that uses high-resolution remote sensing to understand how forests respond to global environmental changes, including logging, land management and climate change, addressing critical issues in ecology and conversation. STACIE will also coordinate with the UWI Mona campus in Jamaica (UWI Mona) and with other universities in LAC with which it has MOU's e.g., Anton de Kom University of Suriname, Universidad de los Andes Colombia (UNIANDES), University of Guyana and University of Belize.
- 5.3 STACIE is already implementing a similar pilot project on the monitoring mangroves using in Trinidad and Tobago and Jamaica using the ground-based 3D Imaging Laser technique that will be the template for the regional MRV. The project is sponsored by the British Commonwealth and Foreign Service Office. STACIE also works with other United States Department of Agriculture (USDA); United States Agency for International Development (USAID); Development and Cooperation - EuropeAid; the Dutch Ministry of Agriculture, Nature and Food Quality and the Centre for International Cooperation in Agronomic Research for Development (CIRAD) (France). The collaboration with the University of Cambridge Centre for Earth Observation (CEO) will facilitate access to the technical expertise of the world-leading research center on the remote sensing of environmental change. CEO uses high-resolution remote sensing to understand how forests respond to global environmental changes, including logging, land management and climate change, addressing critical issues in ecology and conversation. STACIE will also be able to utilize its connections in the region e.g., UWI Mona; Anton de Kom

University of Suriname, Universidad de los Andes Colombia (UNIANDES) to facilitate engagement in participating countries.

- 5.4 The direct beneficiaries of the project will be the executing agencies and national collaborating entities from the various blue carbon projects under the Fund. To date these are: (i) SODECO (JA-T1169); National Environment and Planning Agency, Jamaica; (ii) National Audubon Society (PN-T1233); Ministerio de Ambiente Panama; (iii) Conservacion Internacional Colombia / Puerta De Oro Empresa De Desarrollo Carib (CO-G1029); Ministerio de Ambiente y Desarrollo Sostenible (MADS), Colombia; Distrito de Barranquilla; Corporaciones Autónomas Regionales de los Valles del Sinú y de San Jorge (CVS); la Corporación Autónoma Regional de Sucre (Carsucre), etc. Additional beneficiaries will be added in the future from those participating countries that are eligible under the UK Blue Carbon Fund, as new projects are identified and added to the pipeline of projects.

VI. Project Risks and Issues

- 6.1 A main risk is the limited capacity of projects to implement the monitoring programs. To negate this risk, the program will identify potential resources from each project (i.e., from project teams, researcher institutions, government agencies, universities, coastal communities etc.) for basic training in mangrove ecology and monitoring, ensuring that more than 5 persons are trained within each country.
- 6.2 There is the risk associated with impact of COVID 19 on the implementation of the project including coordination of activities, field visits and in person training. To negate this risk, a virtual communications and training platform will be utilized if required.

VII. Environmental and Social Classification

- 7.1 The ESG classification for this operation is "undefined".