

TC ABSTRACT

1. Basic project data

▪ Country/Region:	Caribbean
▪ TC Name:	Coral Reef Restoration Program
▪ TC Number:	RG-T2381
▪ Team Leader/Members:	Team Leader: Gerard Alleng (INE/CCS); Team members: Alfred Grunwaldt (INE/CCS), Ines Ferreira (INE/CCS), Michele Lemay (INE/RND), Sara Valero (INE/CCS), and Milagros de Pomar (INE/CCS).
▪ Indicate if: Operational Support, Client Support, or Research & Dissemination.	Research and Dissemination
▪ If Operational Support TC, give number and name of Operation Supported by the TC:	n/a
▪ Reference to Request: (IDB docs #)	n/a
▪ Date of TC Abstract:	07/03/2013
▪ Beneficiary:	Caribbean
▪ Executing Agency and contact name:	Bank Executed: Gerard Alleng, Climate Change and Sustainability Division of IDB (INE/CCS)
▪ IDB Funding Requested:	USD\$830,000
▪ Local counterpart funding, if any:	US\$166,000
▪ Disbursement period:	22 months
▪ Required start date:	July 31 st 2013
▪ Types of consultants:	Firms and/or Individuals
▪ Prepared by Unit:	INE/CCS
▪ Unit of Disbursement Responsibility:	INE/CCS
▪ Included in Country Strategy (y/n);	n
▪ TC included in CPD (y/n):	n
▪ GCI-9 Sector Priority:	The project contributes to the following GCI-9 lending target: Climate change, sustainable (including renewable) energy, and environmental sustainability

2. Objective and Justification

Caribbean nations are particularly vulnerable to the effects of climate change as a result of their relative isolation, small land masses, concentrations of population and infrastructure in coastal areas, limited economic bases, high dependence on international tourism and climate-sensitive ecosystems and limited financial, technical, and institutional capacity for adaptation.¹ Expected impacts of climate change in the Caribbean region for the upcoming years include: (i) sea level rise (SLR); (ii) decreased mean annual precipitations; (iii) increased annual temperatures; (iv) increased sea surface temperature; and (v) increased storm activity and intensity. The implications of these changes on the socio-economic and environmental conditions are expected to be significant, which will include degradation of coastal ecosystems.²

¹ Murray Simpson et al., *Climate Change's Impact on the Caribbean's Ability to Sustain Tourism, Natural Assets, and Livelihoods*, Inter-American Development Bank, available at <http://www.iadb.org/en/publications/publication-detail,7101.html?id=20685> (2011).

² CARIBSAVE, *Quantification and Magnitude of Losses and Damages Resulting from the Impacts of Climate Change*, available at <http://www.caribsave.org/assets/files/SeaLvlRise-UNDP-CARIBSAVE-SummDoc2010.pdf> (2012).

Coastal ecosystems have been identified as one of the systems vulnerable (with high confidence) to the impacts of climate change, to the extent that even though impacts may vary across regions and localities, it is virtually certain that these will be overwhelmingly negative.³ Thermal stresses, low adaptive capacity of reefs together with small variations in sea surface temperatures are projected to increase the frequency of coral bleaching and morbidity.⁴ These impacts will be exacerbated by increasing human stressors such as population growth, over-fishing and pollution increase.

Under these and the projected conditions, reefs that are already stressed may not survive or may be degraded to the extent that they could not be considered as functional or healthy. In order to provide some measure of resilience, reef rehabilitation practices will have to be implemented together with ecosystem management interventions (e.g. use of Marine Protected Areas). Therefore, the focus of the program intervention will be to advance the understanding of the capability of coral species to survive climatic variation and change and adaptation options that could be implemented to improve their resilience. This operation seeks to develop a coral reef restoration program that will involve measures in Belize and Jamaica that will be beneficial to other countries in the Caribbean. The use of these sites for the program is based on historical and current track record of scientific experience and knowledge on the subject as well as the research facilities in Jamaica, and the history of applied coral restoration work in Belize.

3. Description of activities and outputs.

Component 1: Genetic Resilience: (i) A study on the genomes of corals to identify most resilient species in terms of pH, temperature, wave action; (ii) Development of species with temperature/bleaching/pH resistant clades; and (iii) Identification of cost effective coral culture techniques for the Caribbean. The expected outputs of this component are: (a) increased knowledge about climate change resilient coral species; and (b) identification of most suitable coral culture techniques in a climate change context. The expected outcome of this component is the development of a more robust scientific basis that will support decision making processes in regards to the long term preservation of coral reefs.

Component 2: Applied Adaptation: (i) Support to expand and pilot successful propagation and restoration practices carried out in identified areas in Belize (Placencia) and Jamaica (Discovery Bay). The expected outputs of this component are: (a) transfer of knowledge on successful propagation techniques and lessons learnt; (b) increase of propagation and restoration work. The expected outcome of this component would be the increased resilience of Caribbean reefs which is expected to improve coastal protection, livelihoods of coastal communities and preservation of biodiversity and fragile ecosystems.

Component 3: Information dissemination: (i) Information generated from the genetic and adaptation work will be disseminated to research institutions in the Caribbean through at least two workshops.

4. Budget

Component/Activities	Description	IDB Financing (USD)	Counterpart Financing (USD)	TOTAL (USD)
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³ Intergovernmental Panel on Climate Change (IPCC), IPCC Fourth Assessment Report (FAR): Climate Change (2007).

⁴ Ibid.

Component 1: Genetic Resilience Activity 1. Genome study Activity 2. Development of resilient species Activity 3. Analysis of propagation techniques for the Caribbean	(i) Identification of most resilient species in terms of pH, temperature, wave action. (ii) Development of species with temperature/bleaching resistant clades (iii) Analysis of optimal coral culture techniques for the Caribbean	275,000	-	275,000
Component 2: Applied Adaptation Activity 1. Establishment of propagation sites in Belize and Jamaica. Activity 2. Development of juvenile coral rearing program for spawners.	(i) Restoration sites will be established in Belize and Jamaica utilizing current techniques being employed in the field. (ii) Juvenile stock developed to maintain diversity	400,000	166,000	566,000
Component 3: Information Dissemination Activity 1. Dissemination of resilience and adaptation information	(i) Information generated from the genetic and adaptation work will be disseminated to research institutions in the Caribbean	75,000	-	75,000
Project Coordination	A project coordinator will help manage the program.	80,000	-	80,000
Sub-Total		830,000	166,000	
Administrative Budget (10%)		83,000	-	83,000
TOTAL		830,000	166,000	996,000

5. Executing agency and execution structure

This operation will be executed by the Bank through its Climate Change and Sustainability Division (INE/CCS). The Caribbean Community Climate Change Center (CCCCC) in Belize will be a partner in the implementation of the program. CCCCC has previous experience with working in the country on coral reef preservation and restoration related projects and has ongoing programs that have synergies with proposed program. The Bank will ensure that activities and products are delivered and implemented in a timely manner and meet all quality requirements. INE/CCS will take on the role of overall supervision and implementation of the project and will also provide technical support to the counterparts, the activities and the products. All of the TC products will be subject to quality control by the project team.

6. Project Risks and issues

The main risks of the project are: (i) The products of the components may not meet the quality criteria required for this project. To mitigate this risk it will be ensured that the leading technical counterpart works in close collaboration with the consultant and exhaustively reviews the products to ensure sufficient quality; (ii) Difficulty in collaboration as technical counterparts are located in Belize and Jamaica which presents a challenge to ensure the mutually beneficial aspect of the project in terms of knowledge transfer, activity implementation and communication. This will be mitigated by having the project executed by the Bank which will act as the intermediary and facilitator.

7. Environmental and Social Classification

It is not anticipated that the activities to be financed in this TC will have negative direct social or environmental impacts. Therefore the team considers that, according to the Bank's Safeguards Screening Toolkit, this operation should be given a classification of "C": (i) no environmental or social risks; (ii) direct contribution to solve an environmental issue.