



**Frameworks and Strategies for Sustainable Development  
– Climate Change**

**Enhancing Belize's  
Resilience to Adapt to the  
Effects of Climate Change**

**Tenth European Development Fund Europe**

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**Interim Narrative Report**



## 1. BACKGROUND

**Project Development Context:** Belize is located on the Central American mainland, forming part of the Yucatan Peninsula and lying between 15°45' and 18°30' north latitude, and 87°30' and 89°15' west longitude. It is bounded on the north, west and south by Mexico and Guatemala respectively and on the east by the Caribbean Sea. The total land area is 22,960 square kilometres or (8,867 square miles) of which 95 % is mainland and 5 % distributed among more than 1,060 islands. Total national territory, including the territorial sea is 46,620 square kilometres (approximately 18,000 square miles). Approximately 69 % of the country remains under natural vegetation cover with 39.1% of its terrestrial area is protected forest (much of it incorporated into the Mesoamerican Biological Corridor) and almost the entire length of its coastline is sheltered by the Mesoamerican Barrier Reef. This reef is the second largest barrier reef in the world and was designated by UNESCO as a world heritage site.

The country's total land mass is divided into six (6) administrative districts, namely Corozal and Orange Walk (North), Belize (East and Central) and Cayo (West and Central) and Stann Creek and Toledo (South). Most of the northern half and much of the southern third of the country, along with the entire coastal area and all the islands, are flat and low-lying. The central and western parts of the country are dominated by the Maya Mountains rising to 1,124m above sea level (3688 ft) at its highest point.

Climate change is now regarded globally as an overarching development challenge that can have serious adverse effects on the economic growth of countries, affecting food security, public health, social stability, and population vulnerability. Belize as a SID is considered to be highly vulnerable and is expected to be negatively impacted as the country sees increases in the frequency and intensity of natural disasters such as cyclonic systems, droughts, floods and in the variability and unpredictability of rainfall patterns, increase in temperature and sea level rise impacting Belize's natural heritage as well as the country's productive sectors.

A regional study by the Community Caribbean Climate Change Centre (CCCCC) summarized a number of inherent circumstances that makes the Caribbean particularly vulnerable to climate change. The most relevant for Belize are:

- Protection costs for human settlements and critical infrastructure are too burdensome for individual states.
- High susceptibility to natural hazards including tropical cyclones (hurricanes) and associated storm surge, droughts, tsunamis, and volcanic eruptions. This is especially important given that most key infrastructure (tourism, transport, and communications) and major economic activities are concentrated within the coastal zone and, in some cases, low-lying floodplains. Lack of planning policies and/or failure to enact such policies can lead to large expanses of unplanned developments.

- Low economic resilience due to the extreme openness of small economies and high sensitivity to external market shocks over which they exert little or no control.
- Frequently poorly developed infrastructure: the exception is major foreign exchange-earning sectors, such as tourism.
- Deficit of insurance coverage: organizations and individuals alike often experience difficulty in securing requisite levels of insurance or re-insurance due to the perceived proneness to natural disasters.
- Large population settlements are located in coastal areas where they are very susceptible to flooding and storm surge. The prospect of sea level rise thus poses a serious threat for these coastal populations and the supporting infrastructure.

Sea level rise bears other potential consequences such as coastal erosion and land loss, flooding, soil salinization, and intrusion of saltwater into groundwater aquifers. The quantity and quality of available water supplies can affect agricultural production and human health. Similarly, changes in sea surface temperature, ocean circulation, and upwelling could affect marine organisms such as corals, sea grasses, and fish stocks.

Mean annual temperatures of 23-27°C have already increased by 0.45°C since 1960, at an average rate of 0.10°C per decade. According to IPCC scenarios, the mean annual temperature is projected to increase by 0.8 to 2.9°C by the 2060s, and 1.3 to 4.6 degrees by the 2090s. The range of projections by the 2090s under any one emissions scenario is 1.5-2°C. The projected rate of warming is a little more rapid in the wet seasons, May-June-July and August-September-October than the dry seasons November-December-January and February-March-April. All projections indicate substantial increases in the frequency of days and nights that are considered 'hot' in current climate.

During the 'wet' season (May to October), mean monthly rainfall can be 150 to 400mm, with highest rainfall totals in the south. In the dry season (November to April), most of the country receives less than 100mm of rainfall per month and 2060s projections from different models indicate decreases in total mean rainfall.

Finally, in recent years, Belize has been prone to cyclical hurricane damage, tidal wave, floods and wind damage to agriculture, property and infrastructure which have caused devastating effects to the economy. During the last 75 years, 21 tropical storms have been recorded in Belize. One out of every three storms has been hurricane of category 3 severity and the incidence of those extreme events has increased in recent years. Statistics gathered have shown that the coastal towns and areas of Belize are extremely exposed to high winds and storm surges. Belizean agricultural and economic infrastructure are also especially vulnerable to flash floods due to the low sea levels in large areas of the country and heavy rainfalls accompanying these storms that are contributing a significant fraction towards the high wet-season rainfall totals.

Because much of the strategies for creating sustainable growth of rural areas in Belize have not focused on water security and human health, this GCCA project was initiated to begin the work of addressing this important need. With much of Belize being affected by low lying, flood prone

areas, flooding events have proved to be more frequent than in previous years as well as periods of severe water shortage and drought.

This GCCA Project will aim for two specific objectives:

- a) To improve the resilience to climate change by means of interventions in the water sector which are consistent with other on-going initiatives.
- b) To enhance GOB institutional capacities related to climate change. The aim is to provide support for the establishment of a permanent climate change desk within the Ministry of Natural Resources that will provide economic, social and environmental expertise to meet the Government's objectives as required for the implementation of the UNFCCC, its Protocol and the Post Kyoto measures. This expert group could also be in charge of designing and coordinating awareness raising initiatives in Belize, in cooperation with specialized institutions such as the CCCCC.

This initiative addresses rural water security by creating an overarching water management authority, community empowerment for water controls and environmental health in promoting water conservation through mangrove replanting, coral monitoring for bleaching events. Agricultural health and cattle ranching techniques to increase farm yields through farm planning, design and community involvement in ensuring maximum yields from each pilot plot.

## **UNDP and cooperation with the European Union and the Government of Belize:**

The European Union's policy towards the United Nations, was first set out comprehensively in the Commission's Communication of 2001 on "Building an effective partnership with the UN" and was further reinforced through a 2003 Communication entitled "EU-UN relations: The choice of multilateralism". The Financial and Administrative Framework Agreement (FAFA), which was also signed in 2003, provided the legal, financial and administrative framework for all contracts concluded between the European Commission and the UN. A year later, UNDP and the European Commission signed a Memorandum of Understanding called the Strategic Partnership Agreement, which outlined the two organizations' "shared goal of establishing the solid foundations for peace and recovery from crisis and of promoting the Millennium Development Goals, particularly, the fight against poverty". As one of UNDP's key global partners, the EC supports initiatives that deliver tangible results and improve lives in over 100 countries around the world.<sup>1</sup>

The Government of Belize and the United Nations Development Programme entered into a basic agreement to govern UNDP's assistance to the country (Standard Basic Assistance Agreement (SBAA), on the 7<sup>th</sup> June, 1982. The UNDP Belize Country Office provides assistance to the Government and people of Belize by working primarily in the in four major thematic listed below.

1. Sustainable Management of Environmental Resources and Disaster Risk Reduction
2. Social Policy and Planning for Poverty Reduction
3. Promotion of Decentralization and Democratic Governance
4. Development Services

The Country office develops and executes its programmes cognizant of the need for gender mainstreaming and the application of a human rights based approach to programming.

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<sup>1</sup> Extracted from the UN and UNDP in Brussels

## 2. INTRODUCTION

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This Interim Report covers the execution period July 2012 to March 2014 of project GCCA ‘Enhancing Belize’s Resilience to Adapt to the effects of Climate Change.’; 2012/295-661 financed by the European Commission. The implementation of the project is regulated by the contract signed in July 2012 by the EC Delegation and the United Nations Development Programme in Belize. Implementation is governed by the policies as prescribed under the Financial and Administrative Framework Agreement (FAFA).

The GCCA Project was developed by national authorities with the assistance of the United Nations’ Development Programme in response to Belize’s vulnerability to climate change. Interventions as prescribed by the project are closely correlated to mitigating the country’s existing low adaptive capacity exacerbated by Belize’s increasing dependence on resources sensitive to changes in climate. Apart from undermining national development efforts, there is growing concern that climate change can threaten or reverse the country’s advances towards the MDG’s and achievements towards human development, should measures not be taken to mainstream climate change into national decision making and development planning.

In responding to the challenges of climate change, the country of Belize has committed itself to defining its institutional and legal landscape for climate change adaptation and mitigation, focusing on the roles of various actors, existing institutional capacities and governance issues related to institutions. In essence the political and administrative systems are being adapted to handle emerging national issues of climate change mitigation and adaptation.

The GCCA programme operates as a part of a larger portfolio of initiatives being organized by the newly created climate change secretariat within the Ministry of Forestry Fisheries and Sustainable Development (MFFSD). Interventions are written to complement activities financed under the GCCA 10th EDF Intra-ACP regional programme which has allocated €8 M for the Caribbean region, which supports priority areas of action identified in the Caribbean Regional Climate Support Strategy by way of institutional support, regional cooperation and creating an enabling environment for natural resources management and agriculture diversification. The Caribbean Community Climate Change Centre (CCCCC), based in Belize, is responsible for implementation of the regional GCCA component and will closely interact with the implementers of the planned intervention through their participation on the Project Board/ Project Execution Group.

*The aim of this Report is to summarize the primary project deliveries as well as document lessons learnt/findings which arose through project execution. An analysis of best practices and constraints is provided in order to inform and facilitate future application of tried technology and agriculture sector development in Belize.*

## 2. EXECUTIVE SUMMARY:

This Interim Report covers the first 20 months of implementation of the European Union funded GCCA project 'Enhancing Belize's Resilience to Adapt to Climate Change'. The project is being implemented by the United Nations Development Programme in Belize through a partnership agreement with the Government of Belize and the Southern Environmental Association (SEA) Belize. The implementation of specific project results are regulated through Memorandums of Understandings between various Government departments including the Ministry of Natural Resources and Agriculture (MNRA), Ministry of Forestry, Fisheries and Sustainable Development (MFFSD), the Ministry of Labor, Local Government and Rural Development (MLLGRD), and the Ministry of Economic Development (MED).

The overall objective of this project is to enhance adaptive capacity and resilience to climate change in national policies, with a focus of Belize's water sector. The commitment of the Government of Belize to realizing these goals can be seen in the creation and adoption of an overarching policy for water management, establishing the National Integrated Water Resource Authority (NIWRA) and a National Climate Change Office (NCCO) housed in the Ministry of Forestry Fisheries and Sustainable Development. This commitment will ultimately see the integration of climate change policy and considerations being reflected throughout all ministries of government.

The GCCA project was written with the intent of investing in capacities at various levels nationally. To a great extent the project executing agencies have contribute significantly to this goal. Support to the operationalization of the National Climate Change Office has contributed significantly in the establishment of a stable platform for climate change coordination, planning and dialogues. Increased visibility of this entity has been achieved through this project facilitating their strategic positioning and involvement in national development discussions and planning processes. Through scholarships and exchanges some 13 national functionaries have received specific training related to their sector and climate change. Notable is the training of 4 social sector actors in sustainable human development.

Project Component 1 has generated much interest in the issue of effective water governance and the institutionalizing of the National Integrated Water Resource Management Authority (NIWRMA) nationally. Through consultancies and stakeholder outreach a proposed structure for the NIWRMA has been developed as is prescribed by the national legislation. As a part of its supporting assurance role UNDP, with expert advisors provided by the UNDP Oslo Governance Center, have supported the review of the proposed structure through a mission in country and the application of an Institutional and Context Analysis (ICA) on Water Governance. The finding of the Oslo mission is being utilized in the forging of way forward actions required for the true institutionalization of NIWRMA and its integration within the broader national governance framework. The Protem Water Committee established in the MNRA has also advance in its effort of building national support to the proposed NIWRA. The Results of this component, while previously delayed, have gained momentum with the



Contracting of GEOMEDIA for the conducting of the ground water assessments necessary to input into the water master plan.

The physical interventions take the form of pilot projects targeting various thematic areas associated with water governance and management. These pilots are expected to expose lessons and best practices in water sector adaptation, as each individual pilot addresses some aspect of water vulnerability and seek to investigate and propose adaptive measures to scarcity and increasing uncertainties and vulnerabilities to increased hydro meteorological hazards. To date these project pilots have contributed to strengthening of implementation capacities by executing partners, and have individually yielded significant lessons learnt both to guide the effective implementation of multi- stakeholder climate change projects as well by contributing significantly to the creation of new knowledge products being used to inform national development planning processes. Key among these are the sector vulnerability assessments which, for the first time, utilized country specific climate models in the determination of possible scenarios relating to changes and impacts resulting from temperature and precipitation variation.

Pilot 3 – “CC and Food Security: Building resilience among cattle producers of the Belize District”, is significantly advanced in establishing demonstration farms and engaging local farmers in drought resilient agriculture. In conjunction with the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE) the Department of Agriculture have engaged more than 100 local Belize River Valley Farmer with technical assistance and capacity building preparing them for their participation in drought resilient livestock management. Protein banks are being established on 50 farms. Interventions to date have contributed positively to increasing farm productivity and improved practices among farmers.

Another integral output from this project thus far is contributed from Pilot 4 – “Accelerating Potable Water Coverage through Diversification of Water Supply”. Under this pilot, the drilling of community wells and the upgrading of existing wells have benefitted more than 250 households to date, securing their access to viable, clean potable water supply. This pilot has also finalized the development of all other related work packages relating to investigation alternative technologies and testing of innovation. These packages are currently at various stages of delivery

Despite advances noted in project deliveries however, the implementing agency must report that efforts are underway to restructure project delivery schedules in an effort to compensate for initial lags in project unit establishment which delayed immediate activation of pilots. Based on its review of project logframe it is determined that a large majority of planned interventions (70%) remained on scheduled with 30 % of actions now being restructured to compensate for unexpected delays.

### 3. PROJECT RESULTS/ ACHIEVEMENTS:

#### Project Objectives:

- a) The development of a resilient water sector through the promotion of interventions consistent with national priorities and direction.
- b) Enhanced GOB institutional capacities for effective climate change governance.

#### Specific Objective:

To enhance adaptive capacity and resilience to climate change in national policies and demonstrate action in support of effective governance of climate change and climate change related impacts in the water sector.



#### Adaptive Management:

The GCCA project has a national scope. It is one that affects all levels of society. From creating a national legislation setting up the water authority to basic community training and empowerment, this project so far has been an effective vehicle in for sustainable rural development and water management in a changing climate. Investments provided and those that will be provided will only serve to ensure water security at the household and community level as well as agricultural development though efficient farm planning. The coordination of the project in its multiplicity is being implemented in a manner that engages all parties to the project to ensure a cohesive and linked execution of each pilot. A stabilization of project management arrangement has expedited project delivery significantly.

One of the unifying activities has been the visibility, education and communication campaigns targeting climate change stakeholders, government functionaries, beneficiary communities and the general public. The existence of a coordination mechanism to ensure cross hybridization of communication messaging has allowed for almost homogenous messaging from the various project components. Sub Component Project messages serve to reinforce each other and in so doing improve the impact. On such example of this is the conscious linkages created by the National Emergency management organization execution theme and the execution themes of the Southern Environmental Association and the Department of Rural Development. As the three components executed by these entities share a common theme of community and environmental resilience, executing teams have collaborated in their delivery planning minimizing transactional costs as well as ensuring a common mechanism for community outreach actions. NEMO's

outreach campaign for its river keepers' programme takes with it the approved message of community climate resilience as is directed by the National Climate Change Office of the Ministry of Forestry, Fisheries and Sustainable Development.

## Component 1: Water Resource Management



Component 1 of the Project is being executed by a ProTem National Integrated Water Management Unit hosted by the ministry of Natural Resources and Agriculture. During the reporting period the ProTem Team has executed actions which delivered the basis/ foundation for effective water governance and integrated water resources management in Belize. Utilizing short term technical support the team has guided the delivery of the recommended organizational structure of the National Integrated Water Resource Management Authority (NIWRMA) with recommendations of complimenting staffing requirement required for the full operationalization of the mandate of the National Integrated Water Resource Act (NIRWA). The institutionalization of the NIRWMA will be guided by developed Organizational and Operational Charter.

Reflective of its role in quality assurance and in demonstration of the value added of a UNDP partnership in implementation. UNDP, through the participation of expert advisors from its OSLO Governance Center utilized the technical deliveries of the national consultant team as the basis of an Institutional Context Analysis (ICA). The Oslo team conducted an Institutional ICA of the water sector with an aim of better understand the context in this sector and to ensure recommendations were well grounded within the existing overarching national governance architecture. The ICA has identified factors that are required for the successful integration of the NIWRMA within national structures and also to determine complementing capacity development responses for improved effectiveness in water governance.

Another key result of this component was the identification of expert consultants and the initiation of a consultancy to determine ground water viability for the Savanah Province, a rapidly growing, multiple use water use zone in Belize. The results of this consultancy will not only inform the elaboration of a water master plan for the region (a document stated by the NIWRMA as needing to be in place to guide the work of the new management authority), but also set to deliver local capacity building among water functionaries, providing them with a blueprint for ground water assessments for the country of Belize. The close incorporation of national teams in

the assessment is providing a platform for knowledge exchanges, introducing national counterparts to methodologies and technologies utilized in effective ground water monitoring and quantification.

## Component 2: Climate Change Governance



Component 2 of the project is executed by the National Climate Change Office (NCCO) within the Ministry of Forestry, Fisheries and Sustainable Development. The primary aim of this component is to enhance national capacities to plan for and to coordinate a national response to the threats of climate change. Towards this end the NCCO have achieved several key milestones including determining the existing national vulnerability profile through the conducting of individual sector vulnerability assessments for the Tourism, Agriculture, Fisheries, Coastal Development and Health Sectors. Assessments of these sectors took a people centered approach and results will now feed into the elaboration of individual sector specific adaptation strategies. In the conducting of these assessments key national partnerships were forged with INSMET Cuba who assisted the project consultants in scaling down climate prediction models allowing for country specific observations and scenario planning. Partnerships with the Caribbean Community Climate Change Center (CCCCC) were utilized in ensuring quality of deliveries and ensuring their relevance to national planning processes.

Strengthened partnership with the CCCCC also lead to the initiation of processes towards another key Climate change Governance milestone, i.e. the development of the Country's first comprehensive Climate Change Adaptation Policy and Framework Strategy. It is also a demonstration of the realization of synergies between the Global Climate Change Alliance Caribbean Support Project and the National GCCA project. As both projects called for the development of enabling policies, strategies and environments for effective climate change governance, the UNDP implemented project was able to join the CCCCC in the realization of a joint delivery.

Through the project, capacities within the NCCO were expanded by two persons to now include a National Climate Change Officer and a Principal Climate Change Officer. The success of this activity was not in the temporary sponsoring of these positions but in the formalization of these positions through the Public Service ensuring continuity and retained capacities. Expanded

capacities of the NCCO has allowed for greater coordination of national climate change efforts, access to in-house expert advisory services, increased dialogue on the issues of climate change and development and improved national representation at regional and global fora. The expanded NCCO has spearheaded the development of the National Climate Change Adaptation Policy, have launched programme to develop Nationally Appropriate Mitigation Actions (NAMA's), coordinated the elaboration of sector vulnerability assessments as well as informed national positions in regional and global discussions on sustainable development and climate change.

The NCCO has developed a platform for capacitation of members of the public service ensuring the critical mass exists to forward a national climate change agenda. To date 15 individuals have benefited from scholarships and have been the recipient in sector specific training packages. Ministries accessing scholarships include the Ministry of Forestry Fisheries and Sustainable Development, Ministry of Natural Resources and Agriculture, Ministry of Human Development, Social Transformation and Poverty Reduction, Ministry of Works and the Social Investment Fund of Belize. Those trained are expected to facilitate the mainstreaming of climate change concerns into department planning and work programme development.

Apart from those receiving scholarships more than 100 public servants have also benefit from workshop seminars. These workshops cover a varied array of topics including climate change mitigation, vulnerability assessment, climate change modelling. It is believed that individual and institutional capacities have been significantly enhanced through the support of the project. The public service reception of training interventions and opportunities has been very positive to date.

### Component 3: Demonstration Pilots

**Pilot 1: NEMO – Building Resilient Communities – Preparing communities to effectively mitigate the impact of hazards associated with their changing climate (Preparation for extreme weather event/ storm water control and capture)**



The National Emergency Management Organization under the banner of the GCCA project recruited some 150 volunteers to carry out a national community climate vulnerability assessment. Results have been compiled and analyzed informing strategic preparatory and mitigative actions leading up to the rainy/ hurricane season. Rural communities nationwide have been documented by NEMO. The ongoing community outreach has also facilitated the initiation of NEMO's flagship River Keeper Programme which forms the basis of its community flood early warning system.

The project have secured the necessary equipment and materials for the programme start up and large earth moving equipment will be in place within the next quarter allowing for prescriptive drainage programmes informed by the community vulnerability assessments.

### **Pilot 2: SEA – Community Response to the Increasing Impacts of Climate Change (Resilience to water quality degradation/ water conservation)**



This pilot aimed at achieving several outcomes including:

- Implementing a community outreach program to create greater awareness of the importance of mangroves in the face of climate change.
- Developing and implementing mangroves restoration techniques through community groups.
- Establishing a community water monitoring program.
- Applying a community Vulnerability and Capacity Assessment (CVAC), and other participatory tools in targeted communities.
- Developing community specific adaptation strategies to address coastal inundation, sea-level rise, drought, more frequent and intense coastal storms, and other impacts associated with

have reached approximately 75 teachers, principals and other community volunteers through a 3-day training on mangroves allowing them to identify and distinguish the different species of mangroves, and in developing activities surrounding a mangrove curriculum and mangrove rehabilitation co-financed by SEA's Mangrove Action Project. Participants were coopted from Dangriga, Hopkins, Sittee River, Placencia, Seine Bight, Independence, Monkey River, Punta Negra

and Punta Gorda villages, which encompasses the entire southern coast of Belize. A further 100 students are being trained facilitating a broader implementation the restoration guide along the Southern coast of Belize. Their works include the monitoring and the management of mangrove restoration sites.

SEA's community engagement actions are complimented by SEA's continued monitoring of Coastal water quality at 4 main sites within southern Belize.

**Pilot 3: MNRA- CC and Food Security: Building resilience among cattle producers of the Belize District (Diversification of Water Supply, Preparation for Extreme Weather Events, Water Conservation)**



In 2011 persisting drought resulted in high mortality of cattle as a result of limited available feed stock and water supply. Most small scale livestock farmers who are still reliant on pastures as primary supply of animal nourishment exhibited extreme vulnerability to the new patterns of dry as well as associated unprecedented seasonal fires. Project partners in the Department of Agriculture have designed an agro-silvi pastoral system as a direct response to the observed vulnerabilities.

In collaboration with regional agriculture specialist CATIE trained three cohorts of farmers, the first representing the villages of Flowers bank, Scotland Half-moon, Lemonal, Isabella bank, St Paul's and Double Head Cabbage villages. This group of farmers/ small livestock holders formalized their association under the name "Belize River Valley Livestock Enterprise Farmer Field School". The second cohort of farmers represented the villages of Gardenia, Maypen, Biscayne and Crooked Tree where they named their field school "Belize United Farmer's Field School". The third cohort trained came from the communities of Corozalito, Rock stone pond, Nagu-Bank, Bomba and Maskall. Their field school was named "Maskall Cattle Producers Field School"

Framers were exposed to the alternative and sustainable land use management and were thought through demonstration how to develop farm plans incorporate into their own farm plans measures to reduce the effects of "climate change". Farmers also participated in exchanges with farmers from the Cayo district to show how effective farm planning can reduce farmers' vulnerabilities.

A total of 35 farm plans have been completed to date of which 28 farm plans were approved by a subcommittee of the Technical Working Group.

Within the Belize River Valley three demonstration/ teaching farms have been established. These farms provide farmers with practical experience in the utilization of beneficial legumes used in pasture nurturing and feed stock improvement. Legumes were also presented as an alternative affordable source of protein for animal stocks. Farmers have also been introduced to methods of conserving forage through silage and to techniques in preparing urea multi-nutritional block. The project has surpassed its goal of reaching 150 farmers.

**Pilot 4: MLLGRD- Accelerating Potable Water Coverage: Piloting Innovative Solutions in Securing Local Water Supply Sources (Diversification of Water Supply, Preparation for Extreme Weather Events, Resilience to Water Quality Degradation, Storm water Control and Capture, Water Conservation)**

“Water is the primary medium through which climate change will influence the Earth’s ecosystem and, thus, human livelihoods and well-being”. Ensuring potable water supply under climate change scenarios is projected to require significant investment a goal largely unreachable by poor, vulnerable rural populations who represent some of the most resourced poor and remain unreached by supply network.

Pilot 4 has worked to secure and diversify potable water supply for Belize’s rural communities through the construction and rehabilitation of community boreholes and have rehabilitated galleries utilized for water capture and storage. Work packages which include retrofitting of homes for roof collection and the utilization of small scale water purification plants have been finalized. The water needs of more than ten communities have been assessed and this assessment utilized to inform technology choice for water projects.

The department of Rural Development, who has responsibility for rural water coverage engaged stakeholders in more than 5 training events. These training events focus on participatory management of water resources, sustainability of systems, and fee collection and record keeping. UNDP has co-financed this pilot through its support to the establishment of a national water database. This database facilitates the monitoring of national water supplies, distribution and health.

**Pilot 5: FD- Applied: Forest Management- Building Capacities for the Restoration of Watersheds Impacted by Natural Disasters - Adaptation of Basins (Watershed protection, Resilience to water quality degradation, water conservation)**





The Forest Department has identified permanent sampling plots and has initiated baseline assessments of the disrupted areas. To facilitate plot management the Department has conducted a series of training sessions on GIS for rapid ecological assessment. A key delivery to date is a drafted forest management plan which includes consideration for watershed restoration after catastrophic impact.

**Beneficiary Profile Information:** The GCCA sponsored initiative has worked with a diverse set of beneficiaries including government functionaries, farmers and rural community members. To date more than 150 public servants have benefitted directly through professional development opportunities, while institutions have benefited from enhanced human capacities, improved governance structures and the granting of essential equipment necessary for the execution of their mandates.

The project has worked directly with 45 farmers from 15 villages in the Belize River Valley. Special emphasis has been placed on attracting female participation under this project pilot. More than 30% of those engaged are female small holders. More than 350 households have been reached across the country and are now benefitting from improved reliable water systems.

**Activity List:** A very effective way of showing project results is through the use of an activity list where actual deliveries/ results are compared against targets indicated in the project log frame and further elaborated in the project document.

Activities	Key Actions Undertaken/ Completed	Comments/ Lessons Learnt
<p><b>Component 1/ Result 1A</b> Increased climate change resilience in the water sector of Belize as demonstrated by the existence of an improved framework for planning and coordination.</p> <p><b>Activity 1A.1</b> Support the institutionalization of the National Integrated Water Resources Authority within the Ministry of Natural Resources and Agriculture structure</p> <p><b>Activity 1A.2</b> Provide TA in the areas of Institutional Development and Institutional Financial Sustainability to the newly established, National Integrated Water Resources</p>	<ul style="list-style-type: none"> <li>○ Hired Operations Coordinator</li> <li>○ Established office location for pro tem secretariat at HR Established water advisory council</li> <li>○ Outfit pro tem secretariat with necessary office equipment and supplies</li> <li>○ GOB financed support staff of PCPU assigned to NIRWA pro tem secretariat Financial Sustainability</li> <li>○ Consultant contracted. Deliverables expected early 2014</li> <li>○ Contracted deliverables on water management structure in place. Deliverables validated through an ICA process conducted by UNDP's Oslo Governance Center</li> </ul>	<p><b>67% of planned activities completed with one year left in the project</b></p> <p>Despite a late start to the project, the main consultancies are underway and should be completed in time to make proper recommendations for future action and planning.</p> <p>UNDP procedures in contracting the ground water assessment consultant did take a bit of time, but that consultancy is well underway with the first deliverable already sent in.</p> <p>It is expected that 2014 will see many workshops and fora on the topic once the financial sustainability consultancy is</p>

<p>Authority</p> <p><b>Activity 1A.3</b> Elaborate and widely socialize By-laws and regulations necessary for the enabling of the National Integrated Water Resources Authority</p> <p><b>Activity 1A.4</b> Conduct water resource assessment (Ground Water Reserves) to inform Master plan for integrated water management</p> <p><b>Activity 1A.5</b> Prepare National Water Resources Vulnerability profiles and associated Water Safety Plans for the Country of Belize</p>	<ul style="list-style-type: none"> <li>○ Informed relevant Government and Non-Government Agencies of the newly established NIWRA Pro tem Secretariat – new official ministry organogram now includes NIWRA</li> <li>○ Public meetings and workshops with stakeholders scheduled for 2014 once financial sustainability consultancy is completed.</li> <li>○ Ground water assessment of the Savannah province consultancy contracted</li> <li>○ The assessment should also address the vulnerability profiles and safety plans outlined in activity 1a.5</li> </ul>	<p>completed.</p>
<p><b>Pilot 1: NEMO – Building Resilient Communities –</b></p> <p><b>Action 1.1 and 1.2</b> -Formalize and socialize community vulnerability assessment tools/ methodologies</p> <p><b>Action 1.3</b> Establish joint NEMO/ Community Flood Mitigation Teams</p> <p><b>Action 1.4</b> Train community members in early flood detection and early warning techniques</p> <p><b>Action 1.5</b> Support two Community Volunteer River Keeper Programmes (Belize and North Stann Creek rivers) for the continued monitoring of flows and water levels within these surface drainage systems</p> <p><b>Action 1.6</b> Provision of strategic large earth moving equipment to support community drainage, levee / berm/ flood release constructions</p>	<ul style="list-style-type: none"> <li>○ Community Vulnerability Assessments tailored to coincide with that of SEA to ensure congruency of the process and the replicability of the outcomes.</li> <li>○ Community flood mitigation teams established Teams are a part of NEMO's Volunteer river keepers set in place to monitor water levels in these flood prone areas.</li> <li>○ Training in flood detection and early warning techniques will continue in 2014. Procurement of the large earth moving equipment is underway after agreement on equipment specifications took longer than expected.</li> </ul>	<p><b>60 % of this pilot has been completed with one year left before completion.</b></p> <p>Much of the work so far has been done in-house with outreach extension officers of NEMO. This has not only ensured continuity of the initiatives, but also built trust within the communities with these extension officers who train and empower each individual there to monitor their water levels.</p> <p>Relevant equipment has also been procured for monitoring and training.</p> <p>The creation of flood plans is one of the main outputs from this pilot. These should be specific for each community and allow for better decision making and execution of plans.</p>
<p><b>Pilot 2: SEA – Community Response to the Increasing Impacts of Climate Change</b></p> <p><b>Action 2.1</b> Development of SEA's staff and community expertise in conservation initiatives and in ecosystem based adaptation to climate change</p> <p><b>Action 2.2</b> Development and socialization of ecosystem</p>	<ul style="list-style-type: none"> <li>○ SEA implemented a multiple training of the Mangrove Curriculum to schools in the Dangriga, Stann Creek District area from August 6-7. It was done in conjunction with the Ministry of Education and the Ecumenical Junior College. The workshop included a day working in a mangrove ecosystem.</li> <li>○ Water quality monitoring continues at the Laughing Bird Caye National Park, Gladden Spit Marine Reserve, Sapodilla Cayes Marine Reserve and the Placencia Lagoon.</li> <li>○ Cooperation with the Belize Water Service</li> </ul>	<p><b>70 % of this pilot has been completed with one year left before completion.</b></p> <p>The Southern Environmental Association (SEA) has been without full-time staff for Science and Education, which are the</p>

<p>restoration guides</p> <p><b>Action 2.3</b> Implement a community outreach program to create greater awareness of the importance of mangroves in the face of climate change</p> <p><b>Action 2.4</b> Develop and implement a Field Directors training on mangroves in eight primary and secondary institutions in southern Belize</p> <p><b>Action 2.5</b> Establish community restoration teams from among youth and school groups and other community structures</p> <p><b>Action 2.6</b> Establish mangrove restoration and nursery site</p> <p><b>Action 2.7</b> Establish Community water monitoring programme</p>	<p>indicated interest in collaboration as they prepare to implement the “Placencia Peninsula Integrated Water &amp; Wastewater Project.”</p> <ul style="list-style-type: none"> <li>○ A Technical Specialist on this project joined the SEA team for September’s survey of the Placencia Lagoon.</li> <li>○ Community restoration teams formed and are being trained also in community water monitoring and processing of the data as well as mangrove restoration.</li> <li>○ CVA work carried out in conjunction with NEMO.</li> </ul>	<p>primary programs of this project.</p> <p>These positions have been advertised and interviews have occurred in the last month. These positions should then be filled by the end of the month.</p> <p>The Mangrove Restoration Guide received some technical critiques in the peer review process. These will be addressed and remedied in the latest contract signing of Dr. Roy Lewis who will also provide illustrations and add the finishing touches to the guide.</p> <p>Implementation of this guide is scheduled to commence in early 2014 with the addition of the education coordinator along with the restoration teams.</p>
<p><b>Pilot 3: MNRA- CC and Food Security: Building resilience among cattle producers of the Belize District</b></p> <p><b>Action 3.1</b> Establish demonstration drought resistant pastures and forage banks in targeted communities</p> <p><b>Action 3.2</b> Conduct Community capacity development workshops in the areas of pasture management GAP, Production of Forage and Storage and water management for livestock</p> <p><b>Action 3.3</b> Establishment of secure/ reliable water systems</p> <p><b>Action 3.4</b> Establishment of regional livestock holding pens for the protection of livestock from extreme weather conditions.</p>	<ul style="list-style-type: none"> <li>○ Capacity building of farmers have been undertaken in the Belize River Valley</li> <li>○ Capacity building have included learning through peer teaching and farmer exchange programmes</li> <li>○ The river valley was divided into 3 zones and Farmer field schools have been established to cater to all communities in the River valley</li> <li>○ Training workshops in the creation of farm plans, protein banks and the use of pasture seeds, herbicides, fertilizers and forage choppers have also been held in several of these communities.</li> <li>○ Procured items such as seeds, fertilizer and barbed wire have been distributed to each farmer</li> <li>○ The creation of a communal pen has been commissioned for the river valley. This pen situated in the Maskal region is equipped with forage banks and is to serve as a sanctuary for region small farmers in times of severe drought or flooding.</li> <li>○ Alternative “backup “ water .sources are also commissioned for the river valley</li> </ul>	<p><b>80 % of this pilot has been completed with one year left before completion.</b></p> <p>This is one of our most effective pilots. The farmers that are a part of this initiative have expressed their satisfaction with the process, knowledge and assistance that they are receiving.</p> <p>Maximizing farm outputs through farm planning is a concept that they are embracing and excited about.</p> <p>The unexpected rainy weather has delayed some activities (setting up sample plots) but we believe that this project, although it commenced later than the others, will be completed on time in 2014.</p>
<p><b>Pilot4: MLLGRD- Accelerating Potable Water Coverage: Piloting Innovative Solutions in Securing Local Water Supply Sources</b></p> <p><b>Action 4.1</b> Established tube wells/ boreholes to augment water systems already in existence within identified communities</p>	<ul style="list-style-type: none"> <li>○ It was agreed between the Ministry of Labour, Local Government, Rural Development and UNDP that the MLLGRD will undertake these activities.</li> <li>○ The Department of Rural Development has completed assessment of rural communities and a</li> </ul>	<p><b>60 % of this pilot has been completed with one year left before completion.</b></p> <p>Rainy weather for the past two months has</p>

<p><b>Action 4.2</b> Rehabilitate existing community wells making them more resilient to floods</p> <p><b>Action 4.3</b> Pilot the use of small community desalination plants (membrane processes) in the communities of Biscayne and Gardenia</p> <p><b>Action 4.4</b> Identify and pilot household or point of use (POU), drinking water treatment and safe storage technologies in dispersed rural communities</p> <p><b>Action 4.5</b> Establish rainfall collection systems for convenient and reliable water supply during seasonal dries.</p> <p><b>Action 4.6</b> Establish capacities (Centralized and decentralized) for post construction support (PCS) for community managed water systems</p> <p><b>Pilot 5: MFFSD FD – Applied Forest Management: Building Capacities for the Restoration of Watersheds Impacted by Natural Disasters</b></p> <p><b>Action 5.1</b> Develop/ Adopt protocols and methodologies for post disaster rapid environmental impact assessment</p> <p><b>Action 5.2</b> Natural Resource managers trained in the use of GIS technology in the conducting of REA's.</p> <p><b>Action 5.3</b> Evaluation and rehabilitation methodologies socialized among forest resource managers and community managers</p> <p><b>Action 5.4</b> Development of rehabilitation test plots within hurricane Richard impacted regions</p> <p><b>Action 5.5</b> Prepare and implement a long term monitoring plan for biodiversity and water quality in selected watershed areas impacted by Hurricane Richard</p> <p><b>Action 5.6</b> Revision of forest management plans to reflect mitigation and recovery strategies</p> <p><b>Component 3/ Result 2:</b></p>	<p>list of recommended water systems for new boreholes was prepared and handed over to Project Management Unit. Boreholes have been finalized in 80% of communities chosen.</p> <ul style="list-style-type: none"> <li>○ The technical advisory body associated with this pilot have worked to identify and advised on suitable water technologies and associated work package have been completed by the project management team.</li> <li>○ Much of the activities completed under this pilot have been in the form of institutional capacity development.</li> <li>○ Vehicles, GIS equipment and support staff have been procured in preparation for the work to be done in 2014.</li> <li>○ Project outputs are all scheduled to commence in 2014 through consultancies and in-house work by the Forest Department occurring simultaneously.</li> <li>○ Capacities in climate change office expanded.</li> </ul>	<p>caused some delays in these activities, while the unfortunate accident involving some one of the project directors has had some impact on project delivery.</p> <p>By getting much assistance and guidance from the CEO of the ministry, the project execution has continued efficiently.</p> <p>Major procurement activities will begin in January 2014 for all items required for rainfall collection and water purification.</p> <p><b>40% of this pilot has been completed with one year left for project completion</b></p> <p>This pilot has been set back the most from the other pilots due the changing of three (3) project managers in the past year.</p> <p>The Forest Department has hired a full time project manager for specifically for this project and is in the process of hiring one additional technical assistant to ensure on time delivery project outputs.</p> <p>It is estimated that the simultaneous work for each activity can be done and outputs delivered on time.</p>
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<p><b>Enhanced national capacities to plan for and to coordinate a national response to the threats of climate change</b></p> <p>Activity 2.1: Support the expansion and capacitation of the National Climate Change Office</p> <p>Activity Result 2.2 Map existing national climate change actors, roles, and capacities</p> <p>Activity Result 2.3 Draft and seek national endorsement of an organizational framework supporting national climate change governance</p> <p>Activity Result 2.4 Implement campaign to support decision makers at different levels in improving their knowledge and skills on climate change adaptation and mitigation, and allowing their integration of CC into various ministerial/constituency portfolios and social development planning processes.</p> <p><b>Activity Result 2.5</b> Provide public servants and civil society representatives the opportunity for training/ development in the areas of Climate change negotiations; improved participation in UNFCCC processes; planning for climate change; climate change transformations in land cover; climate change education; risks and opportunities for the finance sector; integration of CC policies into national economic and social development planning activities</p> <p><b>Activity Result 2.6</b> Craft national CC adaptation planning and response strategies for three vulnerable sectors (Agriculture, Tourism and Fisheries)</p> <p><b>Activity Result 2.7</b> Facilitate Belize's transition toward low-carbon development pathway, primarily through the provision of training sessions and workshops to enhance the capacity of relevant agencies/institutions on the use of the Low carbon growth modeling framework for planning</p>	<ul style="list-style-type: none"> <li>○ NCCO engage public servants in capacity building. Formal mechanism for capacity building in place. Mechanisms accommodate scholarship provision for targeted studies.</li> <li>○ Assessment of national climate change architecture ongoing</li> <li>○ National vulnerability assessments completed for tourism, water, agriculture, fisheries, coastal development and health completed</li> <li>○ Comprehensive national climate change adaptation policy and strategy commissioned</li> <li>○ NCCO involved in the development of Belize NAMA</li> <li>○ Public awareness campaign ongoing</li> <li>○ TORs were drafted for the development of a LCDS. However, upon careful consideration of the project activity, steps will need to be taken to develop training activities that build up to the development of a strategy.</li> </ul>	<p><b>40% of desired outcome attained with one year left for project completion.</b></p> <p>Lessons learnt: PMU needs to be persistent in requesting the issue be discussed at Cabinet as the Ministers' schedules fill up very quickly with competing issues.</p> <p>Lessons learnt: Employment of a website or social media avenues needs to be considered to promote the advertising of study grants.</p> <p>These study grants will now also be offered to teachers in Belize. This is a great move seeing that teachers have time in their holidays to take advantage of these opportunities that can only help them in their classrooms. It will also see the dissemination of the information to the students in their classes.</p> <p>The availability of data had caused delay. For some sectors, a central repository of data is not available, and this compounds the issue of quality and quantity of data that is accessible.</p>
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<p>purposes</p> <p><b>Activity Result 2.8</b> Develop and implement effective public education, information, and awareness activities on disaster risk reduction and climate change</p>		
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#### 4.0 IMPACTS AND SUSTAINABILITY

Project impacts to date have been significant as the project has contributed significantly in defining the national normative environment. The early effects of improved governance systems and institutions are visible. Most prominent is the increase space for climate change dialogue made possible through an empowered National Climate Change Office. The increased mainstreaming of climate change into the development agenda and into national planning processes is phenomenal. Project pilots are also having significant impacts as pilots address directly address national need. Recent 2013 flooding of the river valley helped showcase the enhanced capacities of River Valley farmers. Farmers interviewed by the media during this time highlighted the need for more interventions like the one currently under implementation.

The project continues to introduce innovation through its pilots and within new governance structures. Care is taken to ensure that solutions piloted or implemented are assessed to ensure seamless absorption into national frameworks. The project continues to inform and contribute to the national enabling environment which accommodated effective climate change management, providing tools to be utilized by functionaries in effective planning, monitoring and management.

**Sustainability of Actions:** Sustainability of project actions is ensured by investments of project efforts to have activities linked into national processes and work programmes. Much is done to ensure that deliveries are accepted by the government of Belize and that deliveries truly respond to a national need. Grounding the project within ministerial work programmes allows for continuity of actions beyond project timelines and also facilitates the building on or expansion of efforts on established project foundations.

## 5.0 ASESMENT OF PROJECT EXECUTION/ LESSONS LEARNT

2012/ 2013 Audit findings indicate that project management units have effectively managed project resources and have demonstrated strengths in adaptive management. There are no associated audit findings with the GCCA project. An internal assessment of UNDP's nationally Implementation (NIM) processes have led to the identification of key best practices for promulgation across project sub components as well as to key lessons learnt for further project development and implementation. As a best practice is the synergizing of UNDP processes with those of the Government of Belize preventing bottlenecks in project execution and in procurement. Amending UNDP's prescribed Contracts, Asset and Procurement Committees to include representatives of the Contractor General's Office have significantly reduced transaction time, increasing efficiency in project procurement.

### **Positive lessons learnt:**

1. Flexibility in project structure is key as the project is executed in very dynamic environments. In order to facilitate synergies and avoid duplication, a flexible project structure was able to more effectively accommodate joint work programmes and delivery across projects.
2. Active communication in a project such as this, which has multiple components, is key to coordination of results and ensuring maximum impacts for project investment. Coordination with other national project portfolios was also seen as being beneficial when attempting to expand the scope of project delivery. The existence of singular officer solely responsible to facilitate discussions and coordination of project sub components was also very useful in maintain project momentum and in the early detection of project issues and risks.

### **Challenges:**

1. The absorptive capacities of some national counterpart ministries present a challenge to fast track implementation. The inception period of many pilots had to be extended creating early project lags that had the potential of compromising project time lines.
2. Much of this project is focussed on institution building/ strengthening, the elaboration of national governance structures including policy frameworks. It should be noted that projects of this nature should take into consideration political risks associated with such activities and consider the potential of project delays as project managers attempt to navigate national political processes.