

**EUROPEAN UNION (EU) CLIMATE CHANGE
ADAPTATION AND DISASTER RISK REDUCTION
PROJECT- JAMAICA**

FINAL REPORT AND EXIT STRATEGY



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1.0 Background Information

1.1 General Project Information

- a. Project title: Climate Change Adaptation & Disaster Risk Reduction Project (CCA&DRRP)
- b. Project numbers: PCA/2010/DEPI/2324-3B47-2664 (XC/6030-11-01) & PCA/2013/DEPI/2324-3B47-2664 (XC/6030-11-01)
- c. Responsible agencies: Manager - United Nations Environment Programme / CEP
Co-Manager - Planning Institute of Jamaica
- d. Project start date: 18/10/2010
- e. Project completion date: 28/12/2013
- f. Reporting period: January 2, 2011 - December 28, 2013

1.1.1 Reference to UNEP's sub-programme(s) and expected accomplishment(s):

United Nations Environment Programme (UNEP) has been entrusted by the European Union (EU) with resources, on behalf of the Government of Jamaica (GoJ), to restore select watersheds; improve coastal and marine resources; strengthen climate change institutional capacities in the public sector; and undertake climate change education and awareness activities. This project will contribute further to UNEP's Caribbean Environment Programme mandate to develop synergies and to strengthen partnerships including, inter alia; establishment of Memoranda of Understanding (MoU) with relevant regional agencies working on climate change projects and activities; to actively engage with other international bodies, organizations, and mechanisms, wherever feasible, for the purpose of focusing more attention on the wider Caribbean region in order to establish adaptation and cooperation efforts on climate change, and make available such resources for cooperation.

1.1.2 Overall objective(s) of the project:

The overall objective of the project was to assist Jamaica with its adaptation to climate change and contribute to sustainable development, particularly in vulnerable communities, through increasing resilience and reducing risks associated with natural hazards. The project aimed to; reduce downstream run-off and associated negative environmental and human impacts through rehabilitation and improved management of selected watersheds; increase resilience of coastal ecosystems to climate change impacts through restoration and protection and enhance institutional and local-level capacity for climate change adaptation and disaster risk reduction as well as awareness raising.

1.1.3 Total budget:

(specify contributions by national government) Exchange rate: 1€: US\$1.3611

Table 1: Overall Project Budget and Contribution

Donor	Proposed	Proposed USD)	Allocation (Actual)
EU	€4,130,000	US\$ 5,621,343.00	US\$5,197,570**
UNEP	€75,390	US\$102,613.33	US\$ 91,000
GoJ	€277,030	US\$ 377,065.53	US\$ 354,842
Total	€4,482,420	US\$ 6,101,021.86	US\$5,643,412

** Based on estimated final disbursement and inclusive of UNEP's administrative fees

The Project was financed through a grant from the EU and received technical and management support from UNEP and GoJ. The Project commenced in October 2010 with the signing of the Contribution Agreement (EU/UNEP) and an initial Project duration of 30 months. This was however extended and implementation subsequently concluded on December 28, 2013 after 38 months. A total of US\$5.129M (€3.924M) was received by the Project during the period; US\$4.794M (€3.667M) supported the implementation of activities while US\$0.336M (€0.257M) was disbursed to UNEP as administrative fees.

The funds allocated were disbursed among the three Result Areas managed by; Forestry Department (FD), National Environmental Planning Agency (NEPA), Metrological Services Jamaica/Environmental Management Division (Met/EMD), in addition to the Planning Institute of Jamaica (PIOJ) which housed the Project Management Unit (PMU). The percentage of funds allocated to each Result Area is depicted in Figure 1 below.

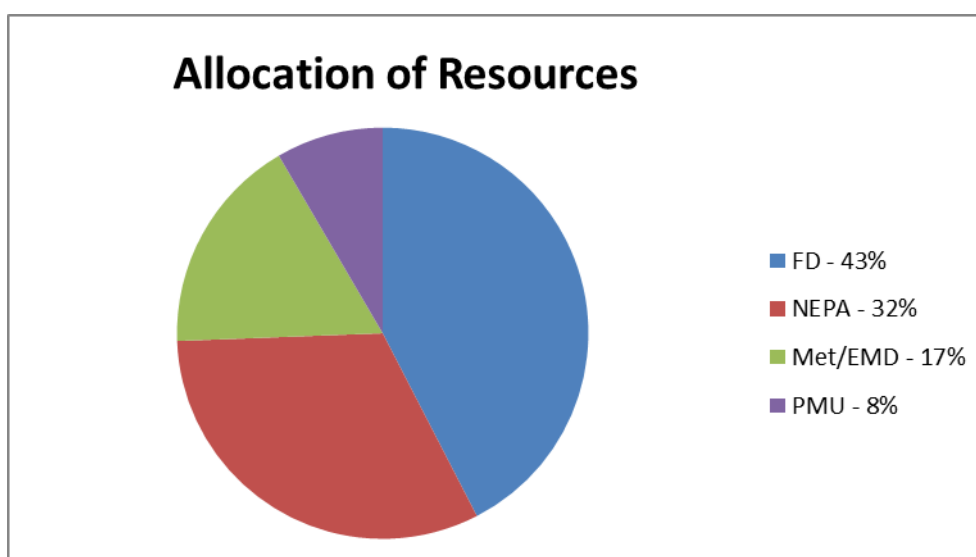


Figure 1: Resource Allocation by Result Areas under CCA&DRRP

During the period, reported expenditure for the Project was US\$4.839M (Table 2). This is US\$0.045M greater than the total amount received from UNEP. The difference represents the amount advanced from the Government of Jamaica, to be reimbursed by UNEP from the final EU disbursement.

Table 2: Consolidated Summary-Expenditure Report

Consolidated Summary Expenditure Report			
Activities	Total Indicative Budget	Expenditure	Variance
	US\$	US\$	US\$
1100 Project Personnel	-	-	-
1200 Consultants	708,528	704,845	3,683
1300 Administrative support	366,443	462,054	(95,611)
1400 Volunteers	-	-	-
1600 Travel	150,741	186,886	(36,145)
2000 Sub Contract	-	-	-
2100 Sub-contractors -Agencies	-	-	-
2200 Sub-contracts -Supp. Org	1,956,470	2,073,274	(116,805)
2300 Sub-contracts -Commercial	-	-	-
3100 Fellowships	-	-	-
3200 Group training	85,667	86,797	(1,130)
3300 Meetings & Conferences	-	-	-
4100 Expendable equipment	59,956	32,372	27,584
4200 Non-expendable equipment	1,180,862	1,065,486	115,376
4300 Premises	18,171	4,687	13,484
5000 Miscellaneous	-	-	-
5100 Operation	70,179	66,259	3,919
5200 Reporting costs	156,590	135,817	20,773
5300 Sundry	5,764	572	5,191
5400 Hospitality	-	-	-
5500 Evaluation	34,250	19,409	14,841
99 GRAND TOTAL	4,793,618	4,838,458	(44,840)
1300 Administrative support ***		217.03	217
Revised Grand Total	4,793,618	4,838,675	(45,057)

** Notes:

1. US\$217.03 was returned by Met/EMD after the cut-off date for the audit.
2. The amount of US\$217.03 was expensed towards administrative support.

The PIOJ received a reduced disbursement from UNEP under PCA 2 due to changes in the exchange rate; as such the budgets for the respective agencies were adjusted downwards. This led to negative variances on some components.

Extension of the Project to December 2013, led to additional resources being required to cover the cost of administrative support under the respective agencies. In addition seagrass was damaged by Hurricane Sandy, and to facilitate the replanting, resources were taken from component '10'. Originally this cost was to be supported from contingency funds. The approval to use additional resources in these areas was passed in the Project Steering Committee Meeting.

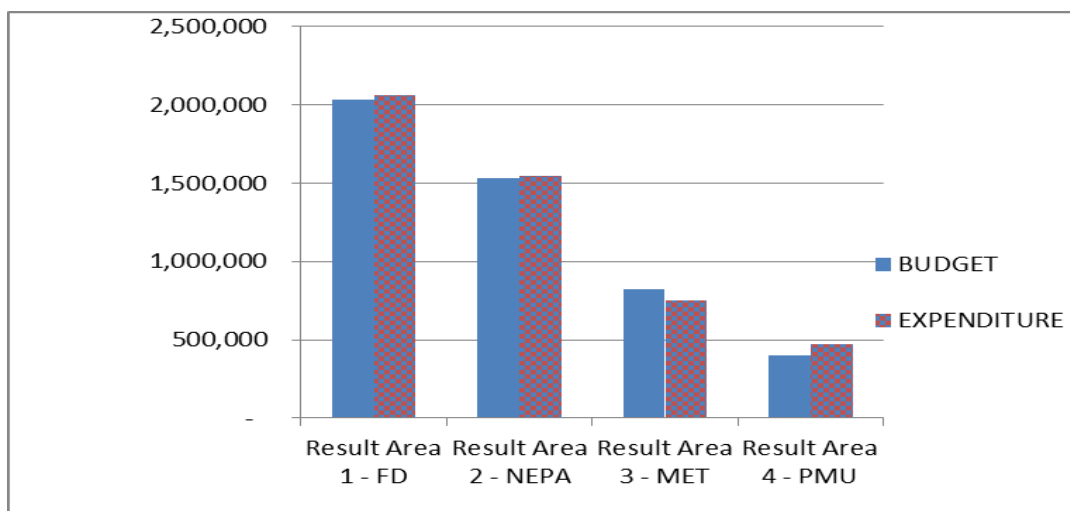
The Subcontracts - component "20" was allocated the largest portion of the overall budget. This was utilized primarily to; establish forest plantation; rehabilitate nurseries and to implement river protection by FD. It was also allocated to livelihood grants and beach restoration under NEPA. Outreach meetings on climate change and the hosting of workshops by Met/EMD were also covered under Subcontracts.

The variance on this component arose as a result of:

- Provision being made to offset the cost to implement the Shorelock methodology; the cost of this was pegged to the US\$ as well as an increase in the number of Alternate Livelihood Grants offered by NEPA
- Additional resources was required due to the increased cost to establish permanent sample plots, plant the additional hectares of plantation and to cover the increased contract cost to implement the river training exercise (National Works Agency for FD).

The resources used to offset the negative variance on component "10" and "20" were taken from component "40 and 50".

Figure 2: A comparative summary of budget and expenditure by implementing entity



Non receipt of funds for contingencies warranted the movement of resources from one component to the next, to facilitate outstanding contracts on hand. These resources were taken from Met/EMD and transferred to the other components to cover all contingent costs.

1.2 Partners and leveraged resources:

Describe collaboration with partners. Specify implementing agencies as well as cooperating organizations and state their role.

Table 3: Roles and Responsibilities of Partners and Cooperating Organisations

Agency/ Institution	Roles& Responsibilities
Planning Institute of Jamaica	Co-ordinated activities for government and other stakeholders, particularly with funding agencies. The Institute had specific responsibility to co-manage the CCA&DRRP.
Forestry Department (FD)	Responsible for the management of Jamaica’s forests reserves which are carbon sinks. FD had responsibility for Result Area 1 which sought to rehabilitate watersheds through slope stabilization measures such as reforestation of denuded hillsides.
National Environment and Planning Agency (NEPA)	Responsible for implementing measures to support the increase in the natural resilience of coastal ecosystems and biodiversity, and outlining a risk based approach to the review of environment and spatial planning guidelines and standards. The Agency supports the use of alternative energy sources, promotes demand-side conservation and efficiency in energy use programmes and implements adaptation measures to support disaster risk reduction. Under the CCA&DRRP, the Agency had responsibility for Result Area 2; to increase resilience of selected coastal areas against potential climate change impacts.
Meteorological Services Jamaica (Met)	This agency is the national climate change focal point under the United Nations Framework Convention on Climate Change (UNFCCC). It has been instrumental in the development of National Communications for climate change. It is a member of the Adaptation Fund Board, one of the mechanisms being utilized in funding climate change adaptation projects and programmes. Under the CCA&DRRP the Met Services had responsibility for the implementation of Result Area 3, focused on climate change capacity building and awareness raising.
Environment Management Division (EMD)	The EMD under the Ministry of Water, Land, Environment and Climate Change works closely with the UNFCCC focal point in Jamaica on many climate change issues. Under the CCA&DRRP, EMD had joint responsibility for the implementation of Result Area 3, focused on climate change capacity building and awareness raising.

1.3 List the additional resources leveraged

- beyond those committed to the project itself at time of approval) as a result of the project (financial and in-kind).

Table 4: Additional Resources Leveraged

Result Area 1 - Forestry Department	
Partnerships, Stakeholders linkages, inter-agency collaborations	Impact on/Contribution to Project Outcome
ACDI/VOCA-USAID	Facilitated farmer field school workshops which provided valuable training to support the livelihood & agroforestry component. The organization through project financing under the Jamaica Rural Economy & Ecosystems Adapting to Climate Change (Ja REEACH) project will also facilitate the execution of three (3) Train the trainer workshops in Forest Fire Management which could not be completed in time under this project.
Ministry of Finance & Planning	The Ministry of Finance & Planning has responsibility for all internal and external financing. They were represented on the Project Steering Committee (PSC) and played an important role in monitoring the Project.
National Land Agency (NLA)	Provided technical assistance with boundary demarcation.
National Works Agency (NWA)	Provided technical support with respect to procurement process for vehicles. The NWA also served as consulting partners for the establishment of river training works conducted under the project.
Planning Institute of Jamaica (PIOJ)	As a partner the PIOJ was responsible for project management through the established Project Management Unit. The PMU provided guidance and monitoring on project implementation and coordination of activities. In addition the Institute provided back stopping support through the Sustainable Development and Regional Planning Unit and the Corporate Services Division for trouble shooting issues and provided facilities for the hosting of the Project Steering Committee.
Rural Agricultural Development Authority (RADA)	Provided support to the demonstration plots by means of training and technical support.
Social Development Commission (SDC)	Provided on the ground support with Agroforestry & Livelihood component working with consultant to engage LFMC community members.
United Nations Environmental Programme (UNEP)	As Manager, UNEP provided guidance on technical & financial aspects of project implementation

United States Forest Service (USFS)	USFS provided valuable input in the development of the Forest Fire Management Plan and training manual.
Windsor Research Centre	Facilitated presentation to members of the Sawyers (Trelawny) community as part of the Livelihood and Agro forestry activities.
Other Stakeholders	This group included farmers, LFMC members, representatives of tertiary institutions and other NGOs who participated in workshops, training sessions and demonstration projects and supported the initiatives of the project.
Result Area 2 - National Environment and Planning Agency	
University of the West Indies:	Provided technical guidance regarding supply of mangrove seedlings, seagrass suckers and coral polyps. Instead of establishing a new plant nursery, NEPA collaborated with UWI to build the capacity of their existing coastal plants nursery. The Department of Life Sciences (Discovery Bay Marine Lab) joined mangrove reconnaissance activities in Negril and Montego Bay and provided technical oversight as it relates to suitability for restoration.
Forestry Department:	Arrangements were made through the Forestry Department to pool resources for composite satellite imagery for the island of Jamaica. IKONOS archival and tasked imagery for coastal areas were purchased to enhance mapping of data and to provide a basis against which to ground truth.
Ecosystems Branch (NEPA):	Provided technical insight relating to review of ToRs for Environmental Business Specialist, product specification for field equipment including GPS units, and underwater field equipment. The Branch also assisted with reconnaissance activities in Negril.
National Oceanic and Atmospheric Administration (NOAA):	With the assistance of the Ecosystems Branch, NOAA was approached to provide technical insight into the seagrass restoration component of the project. A collaborative arrangement was entered whereby NOAA provided the training material and delivery once the logistic arrangements were made. NOAA has committed to continue providing technical direction based on the wealth of knowledge, experience and data that they possess on seagrass ecology and restoration.
Montego Bay Marine Park:	This NGO has been very active and involved in the reconnaissance activities in Montego Bay. They provided local knowledge and expertise as it relates to site selection and made their office available for collation of data from

	<p>the field. Support was also provided to the project by granting subsidized rates for boat hireage to complete data logger rotation and mooring buoy installation and monitoring. The Marine Park also facilitated the storage of field equipment as well storage and drying facilities for dive gears as well as the use of office space by the project team when in Montego Bay.</p> <p>This NGO facilitated discussions surrounding Alternative Livelihood Grant Program and signed a MOU to establish same within the Montego Bay Area. They loaned the project team over 40lbs of lead weights to facilitate seagrass restoration activities, wherein officers had to be negatively buoyant in order to complete the restoration tasks.</p>
White River/ Ocho Rios Marine Park:	<p>This NGO facilitated communication with several key stakeholders within the Ocho Rios Marine Park. Even though they are not chartered with management of the park they have successfully motivated and educated many of the resource users. A verbal agreement was made for continued collaborative effort to roll out project activities within this protected area.</p>
RIU Ocho Rios and RIU Club Negril:	<p>These hotels provided the project with support in so far as making available a marine craft to conduct seagrass reconnaissance in Mammee Bay as well as to plot possible mooring buoy anchorage sites. In addition, they provided local knowledge on the activity associated with many of the reefs in that locale as well as complementary air refills for scuba tanks.</p>
The Urban Development Corporation of Jamaica(UDC):	<p>The UDC facilitated complimentary beach entry and parking conveniences in Ocho Rios in order to access seagrass assessment sites.</p> <p>The also played an integral role in the mangrove restoration works in the Portland Bight Protected Area - Hellshire. Under a letter of agreement they:</p> <ul style="list-style-type: none"> • Provided manpower (10-15 person) to assist in clearing of debris • Provided storage area/dumpsite as well as trucks to transport debris removed from restoration site • Provided site security <p>In St. Ann the cost of the Turtle River Park was reduced by the UDC for the hosting of the Voices Concert.</p>
Caribbean Coastal Area Management Foundation (C-CAM):	<p>This NGO was involved in the reconnaissance activities in Portland Bight. They provided local knowledge and expertise as it relates to site selection. Additionally, they provided boat use at subsidized cost to access mangrove restoration sites, to complete data logger installation and to conduct and seagrass reconnaissance. This NGO remains very active and involved in the reconnaissance activities in</p>

	Portland Bight. They facilitated discussions with regard to artificial reef installation within the Old Harbour Bay Area as well as creating the forum for presentation on the Project to local stakeholders in Old Harbour Bay.
Continental Shelf Associates (CSA) International Inc.:	This Florida based environmental consultancy firm has done extensive work on seagrass restoration throughout the Atlantic Basin including seagrass relocation in Jamaican waters. They agreed to allow NEPA the use of patented seagrass corers for the duration of the seagrass rehabilitation activity. Additionally they provided technical support (training) in the use of the equipment. This firm also lent technical support to tweak and refine seagrass restoration and implementation plans specific to Marine Protected Areas that were considered.
Sandals Negril Beach Resort and Spa:	Provided support during data logger rotation in Negril with regard to complimentary refilling of scuba tanks to complete mission.
Applications Management Division (NEPA):	This Division of NEPA provided technical support by way of a Civil Engineer who accompanied the project team to the proposed Mangrove Restoration site in Portland Bight to assist with design of hydrological alterations and logistics. The Division was also important in liaising with other entities such as National Land Agency (NLA) and Water Resources Authority (WRA) in terms of the necessary components to prepare the wetland for restoration.
Pollution Monitoring and Assessment Branch (NEPA):	Facilitated water quality testing of the standardized parameters within the proposed Mangrove Restoration site in Portland Bight.
Sandals Resorts International (SRI):	A collaborative approach was undertaken to achieve the implementation of 19 Modular Turbulence Generators (MTGs) in the Bloody Bay area of Negril. SRI made available to the project previous studies on the coastal hydrodynamics of the area.
Portland Cottage Community:	<p>The Portland Cottage Community has been pivotal in the mangrove restoration efforts in that area. They provided local knowledge of the wetland, including traditional usage and changes to the structure over time. They also provided suggestions as to the stressors experienced by the ecosystem which have prevented successful planting initiatives in the past. Additionally, members of the community participated in the construction of the tidal channel, feral faunal barrier as well as the planting of red and black mangrove seedlings.</p> <p>They have also lent support by way of monitoring during the bird shooting season. The mangrove restoration site is within the game reserve and accordingly no hunting should take place therein. The community members are very vigilant with the enforcement of this regulation as in</p>

	addition to the ecological ramifications, the hunters could also trample the newly planted mangrove seedlings.
Public Education Branch (NEPA):	This branch provided support by reviewing public awareness materials for display at conferences and symposia attended, namely the Launch of Result Area 3 of the wider project as well as the Climate Change Symposium hosted by the Faculty of Law, University of the West Indies (UWI).
Port Royal Marine Lab (UWI):	The Lab loaned the project mangrove seedlings on two occasions to form part of the project display at conferences.
Negril Area Environmental Protection Trust:	This NGO provided local knowledge and expertise in relation to site selection for mooring buoy placement as well the initial storage of equipment.
Negril Coral Reef Preservation Society:	This NGO facilitated discussions surrounding alternative livelihood grant program and signed a MOU to establish same within the Negril Area. This NGO was pivotal in the organization of the alternative livelihood workshop and assisted in inviting appropriate stakeholders and interest groups to attend. They also assisted in the selection of a suitable venue and refined logistics for meetings. NCRPS also contributed 2 presentations to workshops.
Bluefields Bay Fishermen's Friendly Society:	This NGO facilitated discussions surrounding the Alternative Livelihood Grant Program and signed a MOU to establish same within the Bluefields Bay Area. This NGO assisted with the organization and facilitation of workshops.
St. Thomas Environmental Protection Association (STEPA):	This NGO was pivotal in the organization of the Alternative Livelihood Workshop in St. Thomas. They assisted with identifying key stakeholders to attend the workshop as well as to select a suitable venue and fine tune logistics.
Protected Areas Branch (NEPA):	The project team assisted the branch with the installation of moorings and in return the branch supported the rotation of the data loggers in Bluefields Bay and in Negril.
Result Area 3 - EMD/Met	
PANOS Caribbean, the Voices for Climate Change and NEPA	For each of the parish outreach conducted, Panos Caribbean and Voices for Climate Change, were integral in providing cultural environmental messaging. They were also supported by Women's Media Watch which provided a talent pool for edutainment in the form of drama and songs.
St James Parish Council and UDC	In St. James, the cost for the venue to host the town hall meeting was reduced by the Parish Council. The cost for acquiring an amusement license to host concert along with UDC's cost for the venue were also waived.
St. Thomas Parish	In St. Thomas the cost for acquiring the amusement license

Council	and the cost for the venue to host the concert were both waived by the Council.
Manchester Parish Council	For Manchester the cost of Mandeville Park and amusement license were both waived by the Council.
	Other support included assistance to mobilize stakeholders, assistance with logistics, and identifying reasonable and reliable service providers in each parish.
USAID	USAID collaborated with the Ministry of Water Land Environment and Climate Change to host a workshop in July 2012 to discuss the development of a climate change policy framework for Jamaica. The inputs were reportedly included the Climate Change Policy Framework.
PPCR Project	The Pilot Project for Climate Resilience (PPCR) developed a national communication strategy. Information was shared from the PPCR which informed the communications campaign developed under the CCA&DRRP.

The project, having leveraged the support described by the implementing entities, was able to do and accomplish more with the resources allocated for implementation of activities. This resulted in over achievement on some targets as noted in Appendix 1.

Project Overview

The Climate Change Adaptation and Disaster Risk Reduction Project set out to achieve its overall objective, to assist Jamaica with its adaptation to climate change and contribute to sustainable development, particularly in vulnerable communities, through increasing resilience and reducing risks associated with natural hazards. Project implementation activities were centered on Results Areas 1, 2 and 3, which were assigned specific objectives as follows:

Specific objectives for Result Area 1, implemented by the Forestry Department aimed to reduce downstream run-off and associated negative environmental and human impacts through rehabilitation and improved management of selected watersheds as well as engagement in alternative livelihoods in selected communities. These achievements are evidenced by;

- the reforestation of 405ha of lands in the upper watersheds of select Watershed Management Units;
- the establishment of four Local Forest Management Committees (LFMCs) and
- four alternative livelihoods projects established in LFMCs which promoted agro forestry and good agricultural practices on slopes as well as a supplemental team to police the forest assets.

Other activities implemented built the capacity of the Forestry Department to better maintain and protect Jamaica's forest reserves as it adapts to climate change.

The achievements under specific objective 2, implemented by Result Area 2 (NEPA) include, enhancing the resilience of coastal ecosystems to climate change impacts through restoration and protection of selected ecosystems. This was evidenced under the project by:

- the establishment of soft engineering structures, particularly seagrass beds and mangrove forests;
- Alternative livelihoods promoted and adopted; and
- Mechanisms established to improve management of coastal ecosystems

These were demonstrated by the planting of 1500m sq. of seagrass in props and scars to rehabilitate a composite 20 acres/8.1ha in the Negril Marine Protected Area and the restoration of over 17.3 acres/7ha of mangroves in the Portland Bight Protected Area. Additionally, Shorelock Technology was piloted at three separate locations across the island (Negril, Font Hill and Discovery Bay) to test and gather data on its effectiveness as a tool to halt coastal erosion and promote accretion.

Nine (9) grants were implemented under the livelihoods projects which benefitted mostly farmers, fisher folks, charcoal burners and spear fishermen. The activities ranged from apiary management, eco-tourism, organic farming, sea-moss farming to carbon sequestration through the setting up of a royal palm nursery.

Mechanisms to establish improved management of the coastal eco system were implemented through the development of two (2) Management Plans for the Negril Marine Protected Area and the Montego Bay Marine Park. The project also strengthened the Geographic Information Systems capabilities of the agency with the establishment of a Geo-database with capabilities to inform the establishment of setback limits from the coastline or major drains. This will positively impact the timeliness of approval decisions for all housing or infrastructural developments. Improved management of the coastal ecosystems will also be realized from new data gathering capabilities substantiated by the installation of 27 data loggers and one tidal gauge. The demarcation of two fish sanctuaries with 43 Marker Buoys and the installation of 23 Mooring buoys across three MPAs are also important achievements in better

management of the ecosystems.

Specific objective 3 of the project sought to enhance institutional and local-level capacity for climate change adaptation and disaster risk reduction through increasing capabilities and raising awareness. This is seen in:

- the completion of the Climate Change Policy Framework which is now at Green Paper Stage;
- the institutional review of 6 agencies with responsibility for carrying out climate change initiatives as well as the identification of gaps in the agencies ability to carry out their mandate;
- the training of staff in specific agencies as well as the training of technocrats and local Government Officers also helped to build local level capacity;
- the Climate Change Campaign implemented spanned 13 parish capitals and provided general information in the form of direct presentations as well as edutainment using local cultural icons. The campaign was extended to schools, technocrats, local government officials, farmers, fisherfolks as well as vulnerable groups such as the blind and hearing impaired. Documentation on climate change and climate change adaptation was prepared in braille for dissemination to this group. Presentations were also made to the hearing impaired with the help of a signing specialist. Literature on climate change adaptation and disaster risk reduction was also made available to this special group.

The reach of the project cuts across all parishes, (see Appendix 2). Although all Result Areas contributed, the awareness raising component, Result Area 3 played a significant role by hosting special outreach in parish capitals, and facilitating a radio ad campaigns with nationwide access. A post project Knowledge Attitude and Practices study revealed that the impact of the campaign on knowledge and attitude within the targeted areas was moderate. This is indicating the Jamaicans have become more aware as a direct result of this project.

1.3.1 Socio Economic Contribution: Gender and Poverty Alleviation

Livelihoods projects and agro forestry activities were built around vulnerable communities in the upper watershed areas and those whose subsistence rely on the coast or wetland areas, (see Appendix 3). The objectives were to redirect residents to alternative means of pursuing their livelihoods and to develop synergies between environmental conservation and making a living. This was supported by messages and presentations from the communications campaign which aimed at bolstering the efforts of the project officers and reinforcing sound environmental practices.

A synopsis of the participants in the LFMC livelihoods activities, concur with the view that farming and fishing are male dominated and continued to be so. These core groups were targeted by the project and an example of the initial response through attendance at LFMC workshops is noted in Table 5 below:

Table 5: Local Forest Management Committees workshops showing attendance by Gender

Activity Areas	Total # of Members	Males	Females	Undisclosed
Constitution Hill	78	56	22	-
Dallas Castle	198	120	78	-
Sawyers	124	70	52	2
Westphalia	39	22	17	-
Total	439	268	169	2
%		61	38	1

Table 5 shows that males, who are considered the main perpetrators of poor farming practices and less than desirable environmental stewardship, were the main participants. This augurs well for a change in practice related to maintaining a healthy environment.

1.3.2 Project Assumptions

The design of the project considered the following assumptions as holding true for successful and effective implementation. Table 6 below highlights these assumptions and provides an indication as to how the project fared:

Table 6: Project Assumptions

Assumption	Hold True? (Yes- Y/No - N /Partially - P)	Comments
1. Linkages will be established among agencies and related programmes and projects.	Y	<p>The Forestry Department built synergy with the Jamaica Rural Economy & Ecosystems Adapting to Climate Change (Ja REEACH) project to continue specialized training in Fire Management and continued work with the LFMCs.</p> <p>Result Area 3 was able to use information produced under the Pilot project for Climate Resilience (PPCR) which was running concurrently with the CCA&DRRP to inform the design of the communications campaign.</p> <p>The implementation of soft engineering structures in the Negril area (Shorelock/Seagrass Planting), are precursors to the eventual implementation of a breakwater system to be implemented under the Adaptation Fund project.</p> <p>The interactions among implementing agencies were fair. This could have been strengthened through more robust interface led by Result Area 3 of the project which was considered in the design of the project, the medium through which commonalities would be highlighted and synergies built.</p>
2. Community support for the project will be positive (LFMCs) – FD.	P	<p>Extensive work had to be done by the Rural Sociologists to get communities on board in some areas, especially where encroachment was established. This led to delays in the implementation of the LFMC at</p>

		Sawyers for instance. All LFMCs targeted were eventually brought on board and members became fully functional.
3. Seedlings and other necessary planting materials for reforestation will be available.	Y	Seedlings were available.
4. Hazard events will not severely hamper reforestation efforts.	P	The reforestation effort was affected by Hurricane Sandy in 2012 which flattened the young plants & blocked access to the plantations. Project had to call on contingency funds to reopen access roads and re-stake the fledgling plants. Reforestation was not severely impacted but suffered set back.
5. Communities will adopt and maintain alternative livelihoods (Upper Watershed).	Y	With the help of the Rural Sociologist and an enthusiastic agro-forestry consultant, the communities adopted better practices and are enthusiastic about the alternative livelihoods activities implemented in their communities.
6. Community acceptance of new technology-NEPA.	P	New technology for Artificial Reefs were readily accepted by the community, however, the use of the Shorelock Technology was not readily accepted by the Negril community and NGO community. This resulted in delays as further consultation was required with the community and political directorate to get the activity moving.
7. Hazard events will not severely hamper ability of soft engineering structures to thrive.	N	Hurricane Sandy in 2012 devastated the seagrass planted earlier in the project which resulted in a 16% survival rate noted upon 1 st monitoring after the storm event. Replanting the seagrass became necessary with the use of contingency funds.
8. Survival rate of replanted mangrove is within acceptable levels.	Y	Time zero report on mangrove restoration indicated that more than 50% of the black seedlings succumbed to the hyper saline conditions of the site. The specie planted was changed to red seedlings

		<p>which resulted in an acceptable survival rate.</p> <p>The clearing of the project area and the restoration of the hydrology also resulted in many new natural recruits surviving and complementing the replanting effort.</p>
9. Targeted community members wanting to participate in Livelihoods activities (Coastal Ecosystem).	Y	For the most part, the participation of residents in the communities has been good. The livelihoods projects were targeted at the main perpetrators of poor environmental stewardship but it was not always possible to get these individuals to participate in new activities. The project however engaged other interested members and lay the basis for demonstration effect.
10. Costs of producing material remain stable - Met/EMD	Y	
11. Sufficient time is available to prepare and disseminate awareness raising material.	N	Delays in the take up of funds and the recruitment of personnel and service providers by Result Area 3 resulted in insufficient time to prepare and disseminate some materials. The PMU stepped in and facilitated the preparation of resource material for dissemination.
12. Agencies are willing to collaborate and share their data in the establishment of Data sharing mechanism.	Y	Climate data was available for sharing
13. Consultants have the cooperation of all involved for the institutional reviews to be conducted.	Y	The Agencies participated in the exercise.
14. Agencies willing to share information.	Y	The Agencies shared information as required.
15. Staff willing to participate in training and workshops in capacity building effort.	Y	Staff were willing and participated in training exercises, seminars and workshops.
16. Climate change and disaster risk reduction studies & research skillfully included in	Y	This was done.

general workshops.		
17. Suitable location is found for the Public Pilot Education Project.	Y	A willing partnership was forged with the Manchester Parish Council.
18. Time is sufficient for data collection and analysis (RiVAMP).	N	In seeking to carry out the risk and vulnerability assessment (RVA) it was realized that there was insufficient baseline data. Equipment to capture weather data were purchased to start compiling data specific to the locality. In addition, data on social and economic situation of the study area was collected under the project – A full RVA will be done in the future

Of the total number of assumptions, 66.7% held true, and an equal percentage (16.66%) held partially true and did not hold true, respectively. When the assumptions failed to hold true, the project had to employ adaptive management strategies to overcome the challenges presented. Those that partially held true also called for a redoubling of efforts to reach out to individuals and communities or to implement activities.

As the project progressed it became necessary to review the Logframe to make it more relevant to the situations on the ground or to make changes that positively impact the project outcome. In some instance it became evident that the resources provided could do more especially as the implementing partners were able to leverage other resources to supplement the project activities. These changes are reflected in the revised Logframe. See Appendix 4.

1.3.3 Performance Monitoring

The Project followed UNEP’s standard reporting and evaluation processes and procedures. On the ground management of outcomes was through a Project Cooperation Agreement with the PIOJ which acted as Co-Managers of the project. PIOJ established a Project Management Unit (PMU) within the Sustainable Development and Regional Planning Division, which provided feedback and updates to the Project Steering Committee (PSC). The PSC was set up with the aim of providing general oversight, policy guidance and monitoring of project implementation. Monitoring of Project achievements was tracked through detailed indicators identified in the Logical Framework of the Project. An electronic dashboard or Performance Tracker was established to track these indicators on a monthly basis. See Appendix 1.

The PSC met on a quarterly basis during the earlier stages of the Project, but this was adjusted to more frequent meetings as the Project progressed. After April 2013, bi-monthly meetings were held after which it became necessary to meet monthly down to November 2013.

During the life of the project, one External Result Oriented Monitoring (ROM) Mission took place. This was carried out by the EU in February 2012 and provided recommendations, most of which were taken on board by the PMU and PSC. Table 7 highlights the recommendations and the actions taken.

Table 7: ROM Recommendations and Actions Taken

	ROM Recommendations	Actions Taken
1	Policy reviews need to be completed and the Climate Change Policy consultations need to be done as a matter of priority.	All targets for policy reviews and the completion of a Climate Change Policy Framework were accomplished. Three (3) consultations were held at the county level. One in Cornwall, one in Middlesex and the other in the county of Surrey. The Climate Change Policy Framework has been presented to Parliament and is now at Green Paper Stage.
2	Revise the Logframe to reflect (i) measurable OVIs/targets for OO, Specific Objective/PP. and results/outcomes. (ii) Results stated correctly and (iii) ONE Specific Objective/Project Purpose.	Logframe revised accordingly.
3	Adaptive management decisions: the Steering Committee needs to be more proactive and possibly have a more aggressive leadership role; meet monthly rather than quarterly for the remaining portion of the project in order to have current knowledge of the issues and find quick solutions. PIOJ/UNEP should meet monthly as well.	<ul style="list-style-type: none"> • New members were invited to the PSC to fill deficit caused by members who resigned or were unable to continue attending; • Frequency of PSC meetings was increased; • Frequency of UNEP/PIOJ meetings increased
4.	PIU should document overall project baseline data (from information already held by implementing agencies) to facilitate measures of success at end of project.	<p>Baseline data relevant to the project were documented and submitted to the PMU where possible e.g. baseline data for potential project sites were captured by Result Area 2 (NEPA).</p> <p>Forestry Department has started to gather baseline data with the setting up of 21 permanent sample plots. There are some baselines that were not established before the project began for this Result Area, for instance, baseline for downstream run off.</p> <p>Result Area 3 – set out to conduct a Risk and Vulnerability Assessment (RVA) in the Orange River Watershed in Westmoreland. It became evident however, that some of the baseline data required were not available and so a request was made to adjust the Log frame to put in place the necessary tools/equipment for data capture and to carry out other preliminary studies to</p>

		establish baselines
5	Re-assign Result Area 3 responsibilities to the PIU	Decision taken at the PSC not to reassign the responsibilities as it was felt that the experience was important to build capacity within the responsible Agencies. By providing additional handholding to the Result Area, it was seen where capacity was strengthened, effecting a more positive rate of implementation.
6	Hiring of a "Climate Change Expert" to inform the Communications Campaign is not necessary - PIOJ, NEPA and Forestry can provide information for the messages to be developed. Use funds allotted to CC Expert to boost PIU's capacity to implement Component 3 and conduct procurement activities	Decision taken at the PSC to proceed with the activities as initially outlined for Result Area with responsibility for awareness raising and capacity building but provide support to assist in the roll out of specific activities. It was felt that to change the structure would have caused more delays.
7	Centralize Procurement in the PIU. Use the fact that all the implementing agencies now fall under the same Ministry to pursue discussions to facilitate a faster procurement process. Hire a Communications Firm to roll out Communications Campaign to prevent having too many procurement items under this Campaign.	<ul style="list-style-type: none"> • The PSC decided against centralized procurement as the items causing delays were highly specialized and would not benefit much from having the paperwork completed external to the Agencies; • A communications firm was employed towards the end of the project to assist in meeting some of the communications deadlines and help in providing additional visibility for the project.
8	Use existing climate change KAP and recent ODPEM studies to establish a baseline for identification of gaps from which the Communication messages can be designed.	Existing climate change KAP surveys and studies were used to inform the communications campaign and helped in the design of the message to targeted groups.

1.3.4 Project Scope

The project established 54 objectively verifiable indicators of achievement. Each indicator is linked to specific project outcome. Based on the performance relative to the indicators, the project realized a 94% scope attainment (see Appendix 1). Table 8 below provides a summary of the attainment by Result Areas.

Table 8: Scope Attainment by Result Area

Breakdown of the 54 Indicators Tracked	Scope Attainment
Result Area 1 Forestry Department 18 Indicators Tracked	➤ 16 ≥100% ➤ 2 = 0%
Result Area 2 NEPA 15 Indicators Tracked	➤ 14 ≥ 100% ➤ 1 = 90%
Result Area 3 Met/EMD 21 Indicators Tracked	➤ 19 ≥ 100% ➤ 1 ≥ 75% ➤ 1 = 0%

Result Area 1 was unable to complete Train the Trainer workshops and training of 15 local personnel in Fire Management due to the unavailability of USFS personnel to work in peak fire season for the USA and the impracticability of conducting outdoor simulation exercises during the wet season in Jamaica. This training has been deferred outside the project period and will be supported by another project.

Result Area 2 initially planned to install 30 data loggers however; only 27 sites were identified and as many data loggers installed at the end of the project.

Result Area 3 was late in the preparation of the AV Kits and supporting materials; therefore the subsequent distribution of the Kits was not accomplished.

2 Project Status – Project Delivery

2.1 Result Area 1

Table 9: Forestry Department (FD) – Achievements

Towards reducing downstream run off and associated negative environmental and human impacts through rehabilitation and improved management of select watersheds			
Activities/Outputs (as listed in the Work Plan)	Status	Results	
		Objectively verifiable indicator of achievement	Overall Achievement/ Impact
A. Establishment and/or strengthening of Local Forest Management Committees (LFMC) in selected Watershed Management Units (WMUs)	Achieved	4 Local Forest Management Committees were established and or strengthened in targeted WMUs.	<p>Achievement: Four (4) LFMC's were successfully launched under the project:</p> <ul style="list-style-type: none"> • Two (2) in the Hope River WMU: <i>Dallas Castle, Constitution Hill</i> • One (1) in the Yallahs River WMU: <i>Westphalia</i> • One (1) in the Rio Bueno WMU: <i>Sawyers</i> <p>Impact: <i>The improvement of community-based management structures helped to promote sustainable environmental practices in targeted communities. Establishment of LFMCs helped with the improved management of select Watershed Management Units.</i></p>
B. Reforestation of selected Water Management Units undertaken	Achieved	<ul style="list-style-type: none"> • 400 hectares reforested in targeted WMUs. • Production of 400,000 seedlings. 	<p>Achievement:</p> <ul style="list-style-type: none"> • 405ha planted in Watershed Management Units. • 436,823 seedlings produced and delivered to planting sites, National Tree Planting Day exercises, private planters, and school and community planting activities. <p>Impact: <i>Reforestation in the upper watershed will protect the hillsides from slippage and erosion and reduce downstream flooding in targeted Watershed Management Units</i></p>
	Achieved	<p>Four (4) Nurseries Rehabilitated</p> <ul style="list-style-type: none"> • Mount Airy-St Andrew 	<p>Achievement: Major refurbishing completed at Forestry Department Head Office: This included:</p> <ul style="list-style-type: none"> • The fabrication & installation

		<ul style="list-style-type: none"> • Williamsfield, Manchester • Moneague - St Ann • FD - Head Office, St Andrew 	<p>of a shade house as a germination facility</p> <ul style="list-style-type: none"> • The construction of two designated covered areas with work benches and seed trays. • The construction of a designated concrete area for the mixing of potting medium • Construction of offices and changing facilities for Nursery Staff <p>Completed -Nurseries at Mt Airy, Williamsfield and Moneague</p> <ul style="list-style-type: none"> • Satellite nurseries focused on the upgrading of furnishings such as the construction of work benches, and shelves to be used for the transplanting of the young seedlings from cell trays to plastic bags, for growing out in the nurseries. <p><i>Impact: The establishment of a master nursery for starter plants and with capacity to produce 1 million seedlings per annum has built the internal capacity of the Forestry Department to respond to demand brought on by the impacts of climate change as well as the need to reforest denuded slopes. The Department will now have greater control over the quality of inputs and seedlings with improved efficiency in the work flow and improved quality of the seedlings.</i></p>
<p>C. Agroforestry/ Sustainable Livelihood activities practiced in selected WMUs with priority focus on the Yallahs River WMU</p>	<p>Achieved</p> <p>Achieved</p> <p>Achieved</p>	<ol style="list-style-type: none"> 1. One (1) Demonstration plot developed in each of the four (4) LFMC communities; 2. 65,000 seedlings distributed to farmers. 3. 200 farmers from all four LFMCs registered in Agroforestry and/or Sustainable Economic activities programme. 	<p>Achievements</p> <ul style="list-style-type: none"> • 5 Demonstration plots established as follows: <ul style="list-style-type: none"> ○ 2 in Sawyers, Trelawny ○ 1 in Westphalia, St Andrew ○ 1 in Constitution Hill, St Andrew ○ 1 in Dallas Castle, St Andrew. • 65,200 seedlings distributed to farmers across all four LFMCs; • 402 farmers from all four LFMCs registered in Agroforestry programme:

	Achieved	<p>4. Two community workshops held in partnership with NGOs/CBO</p>	<ul style="list-style-type: none"> • Seven (7) community workshops held in collaboration with NGOs & CBOs with all four LFMCS to promote agroforestry & sustainable livelihood. <p><i>Impact: The twinning of the Agroforestry and livelihoods programmes was a win win situation for the FD and the communities where LFMCS were established. The livelihoods activities helped to demonstrate to the communities that the FD was not just interested in legislation but also about practically impacting their lives and making a better future, where members can make a living in a sustainable manner. The training also helped the citizens to adopt good practices in farming on steep slopes and to manage their farms generally.</i></p>
<p>D. 110,000 ha of Forested crown lands assessed and a geo-referenced database of crown lands developed.</p>	Achieved	<ol style="list-style-type: none"> 1. Target 110,000 ha of crown lands assessed 2. 1 geo referenced database completed 	<p>Achievements:</p> <ul style="list-style-type: none"> • 110,011.08ha of crown lands assessed. • 1 Geodatabase established. Final report completed showing database design, snapshots of tabular pages presented. • Land cover change assessment using the satellite imagery and the established geo-database has started and will continue beyond the project period. <p><i>Impact: The assessment and the establishment of a Geodatabase are critical to the overall management of forest resources in Jamaica. Not only is the technology providing timely information on which decisions can be made but the assessment itself provides current information on the:</i></p> <ul style="list-style-type: none"> • Location and acreage of plantable lands • Distribution of mature stands of commercial plantations • Extent of squatting (Agricultural & structural) • Conditions of the estate boundaries • Recreational potential of the estates

<p>E. Listing and description of 2,600 hectares of Crown Lands submitted for Ministerial approval for Declaration as Forest Reserves / Forest Management Areas</p>	<p>Achieved</p>	<ol style="list-style-type: none"> 1. 2,600 ha of Forest Reserves and /or Forest Management Areas legally described, listed and maps produced. 2. Listing of 2,600 hectares of forested crown lands submitted to Minister for Declaration as Forest Reserves and or Forest Management Areas. 	<p>Achievements:</p> <ul style="list-style-type: none"> • 3700 ha of Forest Reserves/Forest Management Areas legally described, listed & maps produced. • Listing of 3700 ha submitted to Minister of Water Land Environment & Climate Change on June 13, 2013 for Declaration of areas as Forest Reserves (FR) or Forest Management Areas (FMA) <p>Impact: <i>The declaration of these areas will assist the Forestry Department in carrying out its legislative functions thus making the Department more effective in the carrying out of its tasks of protecting the forest. Additional acreages will also come under protection by the FD.</i></p>
<p>F. Forest Fire Management Programme developed:</p>	<p>Partially Achieved</p>	<ol style="list-style-type: none"> 1. Production of Six (6) maps detailing high risk areas for Forest fires 2. One (1) Forest Fire management programme developed. 3. Three Train the Trainer Workshops in Forest Fire Management 4. Train (15) local personnel in forest fire management. 	<p>Achievements</p> <ul style="list-style-type: none"> • Six (6) maps produced by FD's GIS Unit detailing high risk areas for Forest Fires. • 1 Forest Fire Management Plan completed • Not achieved. Train the trainer workshops and the training of 15 local personnel will be carried out under the JA REEACH project facility 2014.¹ <p><i>Impact: The Forest Fire Management Plan, training manual and maps detailing high risk areas has built the capacity of the Forestry Department and its stakeholder to respond to and prevent devastating forest fires. The improvement in the Geo-database has enhanced FD's capacity to identify hot spots for forest fires and to effect more timely decision making.</i></p>
<p>F. River protection structures established.</p>	<p>Achieved</p>	<p>One (1) community/WMU having river protection structure implemented.</p>	<p>Achievement</p> <ul style="list-style-type: none"> • A retaining wall was completed at Cane River in the Dallas Castle community. <p>Impact: <i>This action has helped to stem slope instability and downstream flooding as well as provide road access</i></p>

¹ Jamaica Rural Economy & Ecosystems Adapting to Climate Change (Ja REEACH) ACDI/VOCA project is a one year facility supported by USAID

			<p><i>to the community of Dallas Castle and beyond. This intervention has helped to reduce the risks associated with severe hydro-meteorological activities.</i></p>
<p>G. Establishment of 21 Permanent sample plots and monitoring plots</p>	<p>Achieved</p>	<p>21 Permanent Sample Plots (PSP) established.</p> <p>1. Baseline data documented for 21 PSP plots</p>	<p>Achievement: A total of 21 permanent sample plots established and baseline data documented as follows for: -6 plots - Bellevue-Grand Ridge, St Andrew -3 plots - Moy Hall, St Andrew -3 Plots-Blue Mountain Peak, St Thomas. -3 plots - Grants Pen, St Thomas (Mangrove Forest) -3 Plots - Hyde Hall, Trelawny -3 Plots- Stephney, Johns Vale, St Ann. Impact: <i>This exercise has provided critical baseline data to the Forestry Department in its quest to carry out its mandate of sustainable forest management. Having established these plots the Department will now be able to track the productivity of the forest; the rate of growth of tree stock; biodiversity; accurate assessment of forest cover for the management of Jamaica's carbon pool as well as monitor the impacts of climate change on the assets of the forest.</i></p>

2.2 Result Area 2

Table 10: National Environment and Planning Agency (NEPA) - Achievements

Towards building the resilience of coastal eco-systems to climate change impacts through restoration and protection measures.			
Activities / Outputs (as listed in the project document)	Status	Objectively verifiable indicator of achievement	Results/Impact (measured against the performance indicators stated in the project document)
1. Design and Implement one Ecosystems Database	Achieved	One (1) database developed to monitor coastal ecosystems.	<p>Achievements: A GIS database has been developed with several features including:</p> <ul style="list-style-type: none"> • A coastal development setback tool • A decision-making tool set for the pre-screening of development applications especially within the coastal zone to assist the EIA process • An environmental sensitivity mapping tool to address coastal vulnerability issues related to climate change. <p>Impact: <i>the capacity of NEPA has been enhanced to more effectively track environmental concerns and enhance the decision making process towards more effective development planning.</i></p>
2. Restoration of mangroves forests in degraded coastal regions	Achieved	<ul style="list-style-type: none"> • Restoration of 5.04ha in Portland Cottage • Restoration of 2ha in Hellshire 	<p>Achievement: 7.04ha across two areas restored. These include Portland Cottage, Clarendon and Hellshire, St. Catherine both within the Portland Bight Protected Area.</p> <p>Impact: <i>The resilience of vulnerable coastlines and communities has been enhanced. This has been bolstered by supporting public awareness programmes and livelihoods projects which will help to improve the sustainability of the action.</i></p>

<p>3. Procure and Install Marker Buoys in 3 MPAs and delineated activity zones in two MPAs</p>	<p>Achieved</p>	<p>-At least 5 Mooring/Marker buoys installed in 3 MPAs -2 activity zones delineated</p>	<p>Achievements: -23 Mooring buoys were installed in Marine Protected Areas such as Palisadoes Port Royal Cays; Negril and Montego Bay. -Through MoU agreement with the Caribbean Coastal Area Management Foundation, 2 special fisheries conservation areas within the Portland Bight Protected Area were delineated with marker buoys; specifically the Salt Harbour and Galleon Harbour Conservation areas.</p> <p><i>Impact: The installation of the mooring buoys helps to reduce the risks associated with damage to the coral reefs. The installation of Marker Buoys helped in the delineation of restricted areas preserved as fish sanctuaries and will positively impact livelihoods in the future as well as the ability of rangers to effectively monitor the sanctuaries.</i></p>
<p>4. Establish/Improve Coastal Plants Nursery</p>	<p>Achieved</p>	<p>1 Coastal plants nursery established/enhanced</p>	<p>Achievement: 1 Coastal plants nursery enhanced in Discovery Bay. This was achieved under MoU agreement between NEPA and UWI - Discovery Bay Marine Laboratory. Upgrade to troughs at the Port Royal Marine Lab was also made possible. <i>Impact: This has helped to build the capacity of the country to respond to the need for restoration after severe storm events and as needed to address EIA issues or to restore coastal forests.</i></p>
<p>5. Improved Management of Marine Protected Areas</p>	<p>Achieved</p>	<p>2 Management plans for 2 MPAs prepared.</p>	<p>Achievement: 2 Management plans for 2 MPAs completed for Negril and Montego Bay based on stakeholder feedback and comments from the Agency. <i>Impact: The Marine Protected Areas now have a point of reference for all future plans and programmes. This will aid consensus on the implementation of programmes going forwards and help in protecting the marine resources at each locality.</i></p>
<p>6. Implement Best Practices for restoring seagrass beds at select MPA</p>	<p>Achieved</p>	<p>1000m² of seagrass replanted in prop scars and blowouts in order to achieve rehabilitation of 20</p>	<p>Achievement: The target was achieved and surpassed in June 2013 with just over 1500m² of seagrass replanted in prop scars and blowouts in order to achieve</p>

		composite acres/8.1ha of seagrass beds in 1 MPA	<p>rehabilitation of 20 composite acres/8.1ha of seagrass beds in Negril.</p> <p>The area was replanted twice due to the passage of Hurricane Sandy in Oct. 2012 which destroyed the initial restoration effort.</p> <p><i>Impact: This forms part of the soft engineering implemented to help protect the shoreline. Technical support was provided by the National Oceanic and Atmospheric Administration (NOAA) in good practices relating to the restoration of seagrass beds.</i></p>
7.Procure and Install Artificial Reefs in MPA's displaying vulnerability to rising sea levels	Achieved	2 artificial reef systems installed in 2 MPAs (Negril, Portland Bight)	<p>Achievements</p> <p><u>Negril</u> 19 Modular Turbulence Generators Artificial Reef Structure (MTGs) were fabricated and installed in a public/private partnership with GoJ through the Project & Sandal Resort International at Bloody Bay, Negril.</p> <p><u>Old Harbour Bay</u> A total of 21 molds were built to fabricate Wave Attenuation Devices (WADs). By November 2013, 150 WAD units were fabricated and installed fronting Old Harbour Bay.</p> <p>A monitoring protocol has been established for the structure.</p> <p><i>Impact: Shoreline protection provided for two important coastal communities, one highly important for its tourism product and the other as a fishing village. In both cases physical assets and livelihoods are being protected.</i></p>
8.Procure and Install data loggers for gathering sea surface temperature data	Partially Achieved	<p>- 30 Data loggers installed in 3 Marine Protected Areas (Negril, Montego Bay and Portland Bight)</p> <p>- 1 tidal gauge</p>	<p>Achievements</p> <p>60 Temperature data loggers were procured and 27 installed across the island. These data loggers are rotated on a bimonthly basis and the temperature data downloaded and analysed.</p> <p>Data loggers were installed in 8 MPAs (Negril, Montego Bay, Discovery Bay, Ocho Rios, Bluefields, Palisadoes/Port Royal, Portland Bight, and San San (Portland)).</p> <p>1 tidal gauge installed to monitor</p>

		installed in one MPA (Portland Bight)	<p>intertidal levels at Barmouth Bay fishing village, Portland Cottage.</p> <p>Impact <i>The data is correlated with observances of coral bleaching and will continue to be a critical measure of climate change impact on marine resources and thus act as an early warning system for coastal resources monitors.</i></p> <p><i>Data collected by NEPA is shared with UWI Climate Studies Group as well as interested NGOs.</i></p>
9. Rehabilitate Sand Dunes	A	750m of shoreline /sand dunes restored	<p>Achievement 750m of shoreline treated and monitored in 3 areas. (Negril, Font Hill and Discovery Bay)</p> <p>The Shorelock proprietary technology was identified as a suitable pilot methodology to be employed for this target.</p> <p>Issues & Impact: <i>The Technology was not immediately accepted by the community in Negril but after consultations and a meeting with the Minister of MoWLECC it was agreed to decrease the treatment area in Negril while including a treatment area in Discovery Bay to be monitored independently by UWI.</i></p> <p><i>Baseline, interim and post application environmental assessment reports have been prepared by the contractor as well as application reports. Independent monitoring reports have been prepared by NEPA and UWI. There is cautious optimism about some of the improvements noted to beach profiles, however, the monitoring period is too short to conclude on the effectiveness of the treatment</i></p> <p><i>Note that the methodology, if proven successful will be replicated elsewhere as a restorative tool. Monitoring will be continued by NEPA. Full report and monitoring protocol available for review.</i></p>
10. Establish Grant System to promote alternative	A	At least 1 alternative livelihood grant issued in each of 5 MPAs	<p>Achievement A total of 9 grants were awarded and 10 projects completed as follows:</p>

<p>livelihoods</p>		<p>(Montego Bay, Negril, Bluefields, Portland Bight and St. Thomas)</p> <p>1 Grants Management Manual prepared.</p>	<ul style="list-style-type: none"> ▪ 3 from Bluefields Bay including apiary, organic farming and ecotourism ▪ 2 from Portland Bight protected area including apiary and heritage/eco-tourism ▪ 1 project from Negril with two sub projects including a palm nursery for carbon sequestration and an Irish moss harvesting. ▪ 1 project from The Montego Bay Fishermen’s Cooperative Society Ltd and The Montego Bay Marine Park Trust on ecotourism ▪ 1 project from STEPA for an Apiary project across the parish of St. Thomas ▪ 1 project from Hope Foundation on agricultural disaster risk management. <p>1 Grants Management Manual developed.</p> <p>Impact <i>The reliance on the natural environment as a means of making a living and the use of natural resources in a deleterious manner has been reduced by introducing the beneficiaries to new options. The preparation of a Grants Manual has built the capacity of NEPA to effectively carry out similar activities in the future.</i></p>
<p>11.Workshops to promote alternative livelihoods</p>	<p>A</p>	<p>12 workshops/consultations held in 5 MPAs</p>	<p>Achievement: 18 workshops and consultations were held across the protected areas in support of the livelihood initiatives.</p> <p>Impact: <i>The workshops geared at providing information about livelihood activities, also provided the communities/groups with important information about climate change and the importance of taking care of and protecting the natural resources in their communities.</i></p>
<p>12.Establish baseline indicators for coastal resilience issues</p>	<p>A</p>	<p>Reconnaissance completed and baseline established</p>	<p>Achievement 6 Reconnaissance trips conducted for each of the following MPAs: (Montego Bay, Negril, Palisadoes/Port Royal, Portland Bight, Refuge Cay, Great</p>

			<p>Morass-St. Thomas and Ocho Rios)</p> <p>Impact:</p> <p><i>The project benefited from more precise information becoming available to the implementers prior to designing the proposed plan of action to implement the activities in the Marine Protected Areas.</i></p> <p><i>Additionally, the baseline data established under this Project provides a good basis to monitor coastal resources.</i></p>
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2.3 Result Area 3

Table 11: Met Services Jamaica and EMD (MoWLECC) – Achievements

Towards enhancing institutional and local-level capacity for climate change adaptation and disaster risk reduction through increasing capabilities and raising awareness.			
Activities / Outputs (as listed in the project document)	Status	Objectively verifiable indicator of achievement	Results/Impact (measured against the performance indicators stated in the project document)
1.0 Climate change awareness campaign designed & implemented			
1.1 Climate change awareness campaign launched	Achieved	Communications Campaign launched <ul style="list-style-type: none"> • Report on launch • Media clippings 	<p>Achievement: Climate change awareness campaign launched on March 23, 2012 at the Jamaica Pegasus.</p> <p>Impact: <i>Good media coverage garnered for the event. Attended by the Minister of Water Land Environment and Climate Change and key stakeholders. This activity contributed to enhancing the visibility of the project as well as raising general awareness about climate change issues in Jamaica. It also established links with key areas such as Meteorology.</i></p>
1.2 Interventions across various parishes incorporating CCADRR	Achieved	12 Interventions held with special groups including Parish Councils, private sector groups, the media, and schools.	<p>Achievement: Interventions to build climate change awareness were carried out in thirteen (13) parishes, Specially arranged meetings and presentations were made to the Parish Councils and culturally relevant presentations to the general community through town hall meetings</p> <p>Impact: <i>Although the KAP study conducted in 2013 revealed that the impact of the campaign on Knowledge and attitude was moderate in vulnerable areas covered, culturally relevant materials developed and method to impart the climate change message are expected to be used continuously in the future to reinforce the message through follow on projects and programmes.</i></p>
1.3 Interventions in targeted vulnerable communities	Achieved	Eight (8) vulnerable communities targeted with information about	<p>Achievement: The following 10 communities and groups were targeted and climate change message</p>

		climate change	<p>presented: Old Harbour Bay- St. Catherine Disabled Community - (Portmore) Disabled Community - (Kingston) Portland Cottage-Clarendon Westphalia-St. Andrew Sawyers-Trelawny Bluefields-Westmoreland St. Ann's Bay-St. Ann Buff Bay-Portland Port Antonio-Portland</p> <p>Impact: <i>Climate change message was tailor- made for the special communities and groups. For example, materials were developed for the visual and hearing impaired thus ensuring that knowledge of the risks associated with climate change is improved and build on their capability to adapt. In this regards the project has laid the basis on which others can build to ensure equity of access to information.</i></p>
<p>1.4 Audio-visual kit produced and material compiled for distribution;</p> <p>Kits distributed to at least twenty-four (24) institutions</p>	<p>Achieved</p> <p>Not achieved</p>	<p>1 Audio Visual Kit designed and material compiled for distribution.</p> <p>24 Kits distributed to targeted institutions</p>	<p>Achievement 1 AV Kit designed and materials prepared, the kits were however compiled late in the project which impacted the desired effectiveness</p> <p>Impact: <i>Though produced towards the end of the project the variety of materials produced was wide and the distribution channels used will have a lasting impact. For example, the learning material developed for school aged children and teachers will become major resources in imparting climate change adaptation strategies.</i></p> <p>Due to the lateness in preparing the kit the target for distribution was not achieved.</p> <p>Impact: <i>Not having appropriate collateral material impacted the effectiveness of the campaign.</i></p>
1.5 Case Studies developed	Achieved	Three (3) Case Studies developed	<p>Achievement: Three (3) Case studies developed</p>

			<p>highlighting good practices for climate change adaptation and disaster risk reduction in farming communities;</p> <ul style="list-style-type: none"> • Westphalia, St. Andrew • Glengoffe, St. Catherine, • Jeffery Town, St. Mary <p>Impact: <i>The case studies have added to the body of knowledge and best practices in Jamaica in relation to climate change adaptation and disaster risk reduction. The information is so organised that it can be accessible to be replicated by other communities locally and regionally.</i></p>
2.0 Data-sharing mechanism established			
2.1 Data sharing mechanism established	Achieved	1 data sharing mechanism created and hosted at the Meteorological Service	<p>Achievement One (1) spatial database created and hosted at the Meteorological Service</p> <p>Impact: <i>This has resulted in improved data accessibility. The capacity of the Met Services has been strengthened to provide better service delivery of climate data.</i></p>
3.0 Policy and institutional review conducted			
3.1 Policy and institutional review conducted	Achieved	1 Climate Change Policy and Action Plan drafted and at Green Paper stage	<p>Achievement: Green Paper No.1/2013 tabled in the Houses of Parliament on 12 November, 2013.</p> <p>Impact: <i>The Green Paper will lead to the Policy for guiding climate change related decision making at the sectoral levels.</i></p>
	Achieved	Coastal Resources Policy and Cays Policy drafted. Review and update the National Policy on Oceans and Coastal Zone Management	<p>Draft Cays Management Policy and revised Oceans and Coastal Zone Management Policies have been prepared</p> <p>Impact: <i>The legislative framework for climate change action in Jamaica has been advanced.</i></p>
3.3 Policy review consultations/ workshops conducted	Partially Achieved	At least four (4) policy review consultations/ workshops conducted	<p>Achievement: 3 Workshops/ consultations conducted</p> <p>Impact: <i>Feedback fed into the development of the Climate Change Policy</i></p>

			Framework and Action Plan
<p>3.4 Reviews conducted on institutional arrangements for at least four (4) key Government Agencies.</p> <p>- Institutional review, meetings and workshop conducted</p>	Achieved	<p>At least 4 institutions selected for review: Met Services Forestry Department EMD NEPA</p> <p>At least four (4) Institutional review meetings/workshop conducted</p>	<p>Achievement: Institutional reviews of 6 Agencies conducted: 1. EMD 2. NEPA 3. Met Services 4. FD 5. WRA 6. ODPEM</p> <p>Impact: <i>The gaps in institutional arrangements that have been identified can be used to enhance the intuitions' corporate and strategic plans to make them more climate ready and able to respond public needs.</i></p>
4.0 Capacity needs of the government sector identified and interventions made to address priority needs			
<p>4.1 Conduct capacity needs assessment</p> <p>Identification of training opportunities for staff of at least four (4) key government agencies.</p>	Achieved	<p>At least 4 institutions selected for review: Met Services Forestry Department EMD NEPA</p> <p>List of training opportunities identified.</p>	<p>Achievement: Capacity assessment of the following 6 agencies conducted: a. EMD b. NEPA c. Met. Services d. FD e. WRA f. ODPEM</p> <p>A list of possible training opportunities presented.</p> <p>Impact: <i>The gaps in institutional capacity for the agencies noted above can be used to enhance their corporate and strategic plans to make them climate ready and able to respond to public needs. The information was also used to inform the development of the Climate Change Division in the MoWLECC.</i></p>
<p>4.2 Persons trained in climate change adaptation and/or disaster risk reduction</p>	Achieved	<p>At least two (2) persons trained in climate change adaptation and/or disaster risk reduction</p>	<p>Achievement: Three (3) individuals trained as follows: - Met Services representative - Climate Change and Climate Information Service for Developing Countries, China</p>

			<ul style="list-style-type: none"> - Water Resource Authority representative - Applied Climate Change Professional Training Course, USA - Climate Change Division representative - Applied Climate Change Professional Training Course, USA <p>Impact: <i>The technical capacity of three entities developed to formulate and administer climate change solutions. This is expected to have a multiplier effect through the involvement of the individuals in the climate change focal point network</i></p>
5.0 Public education (pilot) project conducted			
5.1 Pilot Public Education project launched	Achieved	1 pilot public education project carried out	<p>Achievement: One (1) pilot public education project was conducted in Manchester in collaboration with the Manchester Parish Council and the Social Development Commission.</p> <p>Impact: <i>Best practices have been documented and recommendations made as to the possibility for scaling up public education in climate change adaptation and disaster risk reduction to other parishes.</i></p>
6.0 Pilot project on Risk and Vulnerability Assessment (RVA) conducted to assist government in mainstreaming climate change adaptation in national development policies and plans.	Achieved	Preparation towards 1 pilot project on Risk and Vulnerability Assessment.	<p>Achievement: Research carried out and baseline data collected as well as equipment purchased and installed to foster data gathering toward the development of a RVA in the future.</p> <p>Impact: <i>The capacity for continued studies and assessment has been enhanced with the provision of baseline data and specialized equipment for continuous gathering of data. Climate data equipment procured and installed in two communities will enhance availability of local level data. This will aid improved development planning and decision making.</i></p>

2.4 Lessons learned and Best Practices:

Table 12: Lessons Learned	
<i>General Areas</i>	Strategies and processes that led to, or could lead to success
Project Management	
Project Planning	Having SMART indicators in the Logframe prior to project approval – This aids timely implementation and accountability.
Multi-agency implementation	<p>-Preparatory training with beneficiary agencies prior to project start-up to formalise and standardize procedures and systems could prove useful;</p> <p>- Identification of designated focal points within each agency to drive implementation. Best practice includes having a designated project coordinator to ensure the project remains on track and required deliverables are in place should be pursued on future projects;</p> <p>-Working with agencies which have responsibility for core areas and which have structures and systems to aid implement makes for a smoother project delivery.</p>
Multi-level Project Management	The multi-level structure leads to unintended delays. It is therefore necessary to take steps to reduce lag in the project start up process or make allowance for same in pre implementation to overcome this challenge. Note that a significant amount of time was lost working through an intermediary agency due to administrative functions which must be carried out. Additional delays to finalize internal executing arrangements also added to project delays.
Procurement Delays	<p>Planning ahead:</p> <ul style="list-style-type: none"> • Early development of specifications and Terms of References in addition to close monitoring of the procurement plan could reduce time lost. At least six – eight months is required to complete procurement of goods under GOJ Procurement rules - with a short implementation time frame this proved challenging. • Providing out-sourced technical expertise to prepare ToRs and specifications could reduce time taken to prepare. • It may be useful to have a dedicated Procurement Officer, who is familiar with the GOJ procurement procedures and who can provide the requisite guidance necessary to accurately process requests as well as to expedite same
Implementation Efficiencies	<ul style="list-style-type: none"> • A petty cash account would be useful for projects of this nature as there are often small expenses that can be dealt with in this manner instead of cluttering the accounts system with a cash advance request, or suffering the delay and associated cost for PO/cheque request. This is a very simple system

	which could save valuable time.
Human Factors	
Communications & Awareness Raising	<ul style="list-style-type: none"> • Employ specialist firms for areas such as communications and awareness raising (challenging to work through agencies where this is not a core area); • Building on past projects: By working with targeted communities and stakeholders which worked on similar projects in the past, this can bring a sense of continuity, harmonized approaches and community ownership in local disaster risk reduction, resilience and environmental protection work; • “Climate change champions” were useful in reaching key groups; • Building on the strengths of existing initiatives that are working well, while ensuring branding of events and activities are important; • It is useful to work closely with DRR coordinators at parish council levels as well as with churches, citizens associations/organisations, and the police, especially the community officers; • Ensure content for all sector groups as far as possible is made relevant to the specific circumstances within each community. • Rely less on outside broadcasts which are usually pushed by media houses and more on packages with in-depth interviews and advertising spots for key messages over a particular period. This approach worked very well for the project.
Capacity issues	<ul style="list-style-type: none"> • Important to have PIUs/PMUs with dedicated and adequately staffed. Depending on internal staff of the Agencies to assist is not always the better option; • Getting the necessary tools to do the work within the PIUs would save on time spent trying to outsource simple tasks.
Stakeholder Engagement	<ul style="list-style-type: none"> • The importance of community engagement/public awareness and “telling of stories” cannot be over-stated. It is believed that much of the public dissent that led to implementation delays could have been offset by better community awareness and communication strategies. Perhaps for future undertakings there should be increased synergies between communications components and the implementing entities; • Working with Local Authorities or representatives of community groups help with understanding the nuances of each group especially in selecting the best time to meet. • It may be useful for Government entities to have universal stakeholders lists by areas. These can be made accessible through a government information service and can be further tweaked and refined by specific users based on purpose and

	location.
Partnerships	Public-Private Partnership towards the achievement of common goals - The project saw success with the fabrication and installation of an artificial reef system in Negril through the public private partnership with Sandals Resorts International. Without the cumulative financial strength of the partners, the initiative would not have been possible.

2.5 State how the Project Nurtured Sustainability

Is the project or project methodology replicable in other countries or regions? If yes, are there any concrete examples or requests?

2.5.1 Result Area 1 – FD

Reforestation: Through its recurrent budget the Agency has committed (post Project) to the maintenance of the 405 hectares planted under the project. To achieve full establishment, areas planted must be weeded on average three (3) times per year for three (3) years. The Forest Operation Division of the Agency will be responsible for this activity which is incorporated in the Divisions annual work plans. A maintenance schedule for the areas planted has been developed.

The four (4) LFMCs formed under the project will join 13 other LFMCs established by the Department since 2000. These LFMCs are supported in-kind by the FD and monitored by the Rural Sociologists, Foresters-Client Services and Forest Technicians assigned to the region in which they are located. They are given technical and capacity building assistance as needed in carrying out their day to day functions and mandates.

The Forest Fire Management plan developed will provide key information with respect to forest fire management in the forest reserves and Forest Management Areas. The document will serve as a useful tool and be implemented in Forest Management Plans that are being developed by the Agency

The Agro-forestry best practices techniques adopted in each LFMC resulted in the identification and establishment of demonstration plots. Five demonstration plots were established, these plots are owned by individuals and their families, and monitored by the LFMC committee and forest technicians. A percentage of the profit (to be determined by each group) from crops sold will be used to finance the LFMCs future projects.

For the agro-forestry and livelihood component, other sustainable methods identified were:

- The establishment of economic and marketable fruit trees and timber trees
- The introduction of intercropping orchards with cash crops, for example sorrel, escallion, peas, corn, pumpkin, plantain and banana.
- Contouring with pineapple suckers, the use of hybrid MD2 variety which is a high producer, the implementation of a revolving pineapple sucker planting programme, suckers will be available on a yearly basis to new and existing members who did not receive an economic amount, thus increasing group membership.
- The implementation of sustainable land management practices safeguards the environment and contributes to improved soil productivity and yield.
- The collaboration with ACDI/VOCA - USAID in the Apiculture project. The Constitution Hill LFMC collaborated with ACDI/VOCA in the expansion of the bee project. This will strengthen the work started under CCA&DRRP. As a result

there will be more colonies established, thus increasing the number of persons benefiting over time.

2.5.2 Result Area 2 – NEPA

The project has built in sustainability based on the level of community engagement and involvement as well as partnerships entered into; in addition to the absorption of key activities by the Ecosystems Management Branch and Protected Areas Branch of NEPA will ensure continuity.

The strengthening of the coastal plants nursery on the North Coast at the Discovery Bay Marine lab and the expansion of troughs at the Port Royal Marine Lab, have helped to build capacity for environmental sustainability. Having these two strategic locations from which to get coastal plants seedlings will cut down on transportation cost and help to improve the survival of plants taken from one ecosystem to another.

Result Area 2 focused heavily on data collection to support activities in the different MPAs. This is important as it builds a baseline from which comparisons can be made and inferences drawn on the state of the ecosystems. It also laid the foundation for future studies and interventions from an informed position rather than from anecdotal references.

This Result Area also piloted several new methodologies to reduce coastal erosion, these have been documented and are being closely monitored. These methodologies may be scaled up, and or modified further for implementation in similar environments. Through duty travel, project representatives have been able to showcase some of the methodologies employed under the project in Germany and Guyana. The documents prepared and presentations made have been published in the conference proceedings.

2.5.3 Result Area 3 - Met/ EMD

The project funded the development of policies which will guide actions to address adaptation to climate change and recommendations related to the institutional requirements. This will require implementation to which the Ministry of Water, Land, Environment and Climate Change is committed. A number of documents have been produced to improve knowledge of climate change impacts and means of adapting to climate change at the national, community and individual levels.

Connections were made through outreach to communities and these can be developed further to provide continuity. With the involvement and continuous outreach in the recurrent budgets of Agencies and Divisions such as; the Climate Change Division, the Meteorological Services, the Forestry Department and others, it is believed that the interactions with communities will continue.

The project methodology of using cultural icons and culturally relevant messages is highly replicable. The public awareness approaches could be shared regionally.

It should be noted that the experience of the Alligator Pond Public Pilot Education Project of the CCA&DRRP is being used to build on plans for the community to submit a proposal to the Caribbean Development Bank's Community Disaster Risk Reduction Fund.

3 List of Documents

- (for example, publications, reports of meetings/training seminars/workshops, list of participants, Means of Verification)....

The means of verification for each project outcome by Result Area are provided in Appendix 5. These include technical reports, reports on workshops/seminars, field reports with the requisite participant's lists, case studies etc.. Due to the size of these reports they are only available in hard copy. They are available for review in the Sustainable Development and Regional Planning Division, PIOJ.

4 Project Effectiveness/Impact

4.1 How relevant is the project?

(In terms of (national) capacity building objectives and the utilization of the technical, human and other resources available in the country)

The project was very relevant in terms of the overall national needs to build the resilience of the natural environment as outlined in Vision 2030 Jamaica - National Development Plan. Vision 2030 highlights Hazard Risk Reduction and Adaptation to Climate Change among the main National Outcomes which the country hope to realize. As such, the Project became one of the first stepping stones in that direction. Citing a lack of data and the need to build capacity as critical first steps to be addressed, the project made provision for and sought to establish and or strengthen data gathering capabilities through the different Result Areas of the Project. Specifically the following activities were used to address the needs identified:

Result Area 1

- Reforestation of 405ha in the Yallahs River WMU, Hope River WMU and White River/ Rio Bueno WMU has contributed to the rehabilitation of the upper sections of the watersheds, and will aid in reducing downstream run-off and associated negative environmental and human impacts (including soil erosion) that affect nearby communities, fosters biodiversity preservations through rehabilitated habitats.
- Improved Agro forestry practices, awareness to climate change, and protection of the environment, training farmers to cultivate climate resilient crops, using improved agricultural techniques all result in improved protection of our watershed.
- Development of a Forest Fire Management Plan is a critical step in protecting the forest;
- Upgrade of nurseries has enhanced the capacity of the Forestry Department to produce 1 million seedlings per annum
- Establishing and monitoring Permanent Sample Plots within pristine forest areas and mangrove forests is an important data gathering tool adopted by the Forestry Department

Utilization of technical, human and other resources-

- The agro forestry intervention involved the planting of a combination of local timber trees, endemic fruit trees based on zoning and climatic conditions. Trees distributed took into consideration the history of the community, marketability

and farmer's interest. The activity also promoted erosion control through training and public education. Pineapple was planted to stabilize slopes thus assisting in soil conservation. Timber and fruit tree combination was introduced to the cropping system to provide long term economic and environmental benefits. Pineapple production will form a part of a revolving operation where existing farmers will assist new member with suckers thus sustaining project life and providing income, which will lead to poverty reduction within the communities involved.

- Technical data and resources acquired under the project, feeds into the development of the Geo-referenced database and the land use change assessments. The land use assessment provided valuable details on forested cover change for the island over a ten (10) year span. This analysis will feed into national policy as it provides information on the deforestation rates of the island's forest reserves.

Result Area 2

The project was very relevant to NEPA's quest to build capacity in climate change adaptation and disaster risk reduction. It enabled the Agency to:

- Procure critical equipment e.g. Data Loggers and Tidal Gauges as well as conduct baseline studies to measure current situation and implement plans for corrective measures;
- Conduct pilot studies of new technology e.g. Shorelock and artificial reef systems to stem beach erosion and aid accretion;
- Train in best practices for seagrass restoration;
- Establish Geo-database incorporating decision making tools such as parameters for setback limits.

Having established several baselines, the country has started to build a culture of data gathering in the area of climate change which will enable future comparison and support evidence based decision making.

Result Area 3

Under Result Area 3, the Meteorological Service and the Environmental Management Division of the Ministry of Water, Land, Environment and Climate Change were able to leverage working relationships with several partners to achieve the anticipated results of the component to increase awareness among Jamaicans about climate change and about adaptive measures that can be taken at individual, community and national levels to cope with climate change. Through the development of a data sharing mechanism, policy development, supporting pilot projects in vulnerability and risk assessment, public awareness, institutional review, training of government personnel and implementation of a communications campaign, project partners at the national, parish and community levels were able to participate in the planning and execution of events and benefitted from the technical information passed on to them.

The Project therefore, engaged Jamaicans, through participatory learning and direct knowledge sharing, improving existing technology and expanding the awareness of the public and private sectors in terms of how these important messages can be disseminated. Utilizing culturally sensitive and relevant media, the Project built its human, technical and communication capacity through the following means:

- Completion of the Climate Change Policy Framework and Action Plan which is now at *Green Paper* stage;
- Institutional reviews of key agencies conducted and training programmes recommended to address gaps;
- Staff of key Agencies being trained and workshops held with technocrats to build knowledge and awareness;
- Implementation of a climate change communications campaign in keeping with the National Climate Change Communications Strategy for Jamaica;
- Enhancement of GIS database capabilities for better service delivery and data sharing;
- Case studies and Knowledge, Attitude and Practices Surveys (KAPs) completed to document best practices in Jamaica as well as to measure reach and effectiveness of campaign conducted;
- Procuring and commissioning equipment (automatic weather station and rain gauge) for data collection in specific watershed to enhance continuous studies and influence local level decision making.

4.2 Has the project been able to lead to durable, self-sustained processes and synergies with other development interventions?

The Vision 2030 Jamaica – National Development Plan includes hazard risk reduction and adaptation to climate change among the national outcomes for which sector plans have been developed. The Medium Term Socio-Economic Policy Framework 2013-2016 in support of the Vision 2030 plan also addressed the matter. With the development of the Climate Change Policy Framework under this project, the next steps will include the incorporation of climate change considerations into various sector policies and plans where this has not yet been done, for example, the draft Energy Policy, the Carbon Emissions Trading Policy (now being developed), the development approval process, and the revised Development Orders currently being prepared. This Project emphasized an ecosystem-based approach to adaptation to climate change and will allow the responsible agencies, and by extension, Jamaica, to incorporate lessons learned and best practices in the environmental planning process.

Jamaica has been involved in a number of projects and initiatives that are climate change focused or include climate change as a key component. Such interventions include sectors such as tourism, public works and agriculture. Several of these interventions are being undertaken in part or whole by the implementers, partners and stakeholders of this project and include:

- NEPA strengthening its research ethos, through the testing of new methodologies and the general establishment of baseline data has been generated and can be accessed to inform decision making
- Continued work by the Forestry Department to expand the establishment of 4 new Local Forest Management Committees as mandated under the Forest Act of 1996 also speak to self-sustained processes which will continue to build and strengthen the natural environment
- The development of policies under this project; the Climate Change Policy Framework; the draft Cays Policy and the Draft Policy on Oceans and Coastal Zone Management are also central in guiding climate change developmental activities in Jamaica.

- Synergies with other upcoming coastal works (installation of a breakwater system) in Negril under the Adaptation Fund Project which was predicated on the establishment of seagrass beds in the same area and speaks to continuity and strengthening of protective measures for the coastline.
- Support from other projects such as Jamaica Rural Economy & Ecosystems Adapting to Climate Change (Ja REEACH) project - supported by USAID and the Rural Economic Development Initiative (**REDI**) Project supported by the World Bank also build on work established under this project. Example - the continuation of the Forest Fire Programme and eco-tourism livelihoods programmes.

4.3 Other means by which the Project built capacity

The Project was supported in the purchase of equipment (both expendable and non-expendable) valued over US\$ 0.620M or 13% of the overall funds allocated to the Project. These equipment were purchased using the procurement guidelines established by the Government of Jamaica. The items purchased, were required to complete activities noted in the Project document and are integral to the continued sustainability of the Agencies involved in assisting Jamaica in its quest to adapt to climate change. The inventory of items purchased, (see Appendix 6) has helped in building the capacity of the institutions to carry out varied functions.

4.4 Visibility

Through the Project Management Unit, a Communications Plan was developed, which guided strategies to effectively provide visibility to the Project and the donors. Project branding was considered important and a logo and tag line were developed which were used consistently on all banners, brochures, publications and at different functions and events. Over 40 signs were posted at Project sites, highlighting activities completed and the main financier as well as key support Agencies. The Project also benefitted from frequent articles in the press, most of which were positive.

A communications firm was hired to bolster overall visibility nearing the end of the project when activities were almost completed and there were many 'Project stories' to share on achievements and good practices for climate change adaptation in Jamaica. Different media were used to communicate the messages, including, traditional marketing methods of; press releases, advertorials, feature articles, documentary, audio brochures, media interviews on radio stations and speaking engagements. Additionally, online marketing methods were also used to widen the reach of the Project and these included; the preparation of e-newsletters, creation and maintenance of Twitter, Facebook and YouTube accounts, Google banner ad, ads on major local newspaper websites sites as well as Facebook adverts.

Appendix 7 captures a pictorial highlight of the main activities of the project from its launch in February 2011 to its closure in December 2013.

5 Exit Strategy

The purpose of establishing an exit strategy is to ensure continuity of the work started under the Climate Change Adaptation and Disaster Risk Reduction Project in Jamaica. This project also built on previous projects and so it is important to have an indication as to where Jamaica goes from here. It is also important in the cases where discrete activities will require monitoring in the future to see the full result and have those documented. The exit strategy will establish, who will continue to monitor and document and where this information can be found or accessed in the future.

5.1.1 Result Area 1 – Exit Strategy

- For the agroforestry/livelihood component monitoring of the demonstration plots is recommended for sustainability. One strategy is that the LFMC members, as well as the Forest Technicians assigned by the Forestry Department will continue to monitor these plots and reports will feed into Monthly and Annual reports of the Department. The Ministry of Agriculture & Fisheries Apiculture Unit will monitor the apiary on a monthly basis, based on requests made by the LFMC. The Forestry Department will continue working with communities in protecting the forest thus sustaining livelihood in associated communities. This relationship between the Department and the LFMCs will only get better and will eventually extend to other forest communities in Jamaica.
- Permanent Sample Plots will be monitored every five years and inventory data collected and analyzed. Reports will be available at the Forestry Department and reflected in the Annual Reports.
- Maintenance plan (weeding) developed for areas planted will allow for full establishment of the plantations. These are part of the Department's maintenance protocol. Funds to continue this process will be from the GoJ recurrent budget.

5.1.2 Result Area 2 - Exit Strategy

Monitoring is required for many of the activities implemented by NEPA. Protocols were pre-determined prior to the project closure for monitoring parameters and frequency.

- The mangrove restoration site in Portland Cottage, seagrass restoration initiative in Negril, artificial reef in Old Harbour, Shorelock treatment sites Negril, Discovery Bay and Font Hill and data logger rotation will be undertaken by the Ecosystems Management Branch of NEPA.
- The monitoring cycle established for these activities is quarterly for the first year, biannually for the next 2 years then annually for the last 2 years. The Branch has written the activities into its operational plan and accordingly has solicited funding through the Agency from the Government. The Branch will also look at applying for small grants and project funding, where necessary.
- The information garnered at each monitoring cycle, will form part of the NEPA Branch reports and will be accessible through SharePoint, and across Government entities upon request and to the wider public through the Access to Information Act.
- Monitoring of the mangrove restoration site in Hellshire, St. Catherine will be undertaken by the Urban Development Corporation (UDC) as was agreed upon in the project charter. Monitoring is to be done quarterly for the first year, biannually for the next two years and annually thereafter. The reports generated are to be shared with NEPA where they will be archived and included in the monitoring reports collated by the Ecosystems Management Branch.

- The Coastal Plants Nursery will be monitored and maintained by the University of the West Indies – Discovery Bay Marine Laboratory. Information on the utility of the coastal plants nursery will be shared with NEPA, as requested.
- C-CAM will be responsible for the maintenance of the marker buoys erected to delineate the 2 special fisheries conservation areas. Based on the methodology and materials employed to construct and deploy markers, maintenance costs should be minimal.
- Through the public private partnership with Sandals Resort International (SRI) to install the artificial reef, the MTG Artificial Reef will be maintained and monitored by SRI for at least 2 years. The reports generated will be shared with the Ecosystems Management Branch of NEPA and form part of the general beach monitoring reports.

5.1.3 Result Area 3 - Exit Strategy

- With the involvement of the Climate Change Division of the Ministry of Water, Land, Environment and Climate Change, valuable linkages have been made and there are plans to continue such work by the Division, taking into account funding opportunities. For example, the awareness raising campaign will be expanded through Investment Project 1, PPCR. This is scheduled to commence late 2014.
- The case studies will be shared with relevant agencies for use of the recommendations and best practices. The final reports will be available on various websites and will be promoted by the Ministry and its Agencies.
- Opportunities to include further outreach with communities will be sought through projects being developed and as a part of the Climate Change Division's work plan.

6 Recommendations

It is recommended that based on the lessons learned and best practices established that another programme with similar objectives be considered to increase Jamaica's adaptation efforts to climate change. Many of the pilot methodologies can be replicated and or scaled up in other vulnerable communities and areas. The community resilience is of utmost importance and focus on exploring additional livelihoods is critical to the adaptation efforts. Other general recommendations include:

1. Project implemented by multiple entities should include a clear and detailed communication plan, agreed upon by all involved. It is believed this will enhance synergies amongst implementing entities and cohesion towards achieving common goals.
2. More opportunities for information exchange should be created through the preparations of abstracts and publication of papers for conferences and journals. This would increase the opportunity to showcase the methodologies being undertaken towards adaptation as well as to learn about other possible practices which may be undertaken whether as a regional or international example.
3. The utilization of lesson learned and best practices to inform project design of any future projects or programmes.
4. The assessment of 'project readiness' of implementers to manage both finance and scope should be completed prior to project start up and the necessary remedial work done to prepare the entities for a project environment.
5. Additionally, community buy in from inception is critical to smooth implementation and success of the project within specific communities. The communication arm of the project should work in unison with the implementers to have clear messages and help in the formulation of approaches that can help to preempt tension, where it can be foreseen.
6. To have climate change considerations infused into the education curriculum. Continued training for public officers on climate change and climate change negotiations should be streamlined into annual work plans.
7. Awareness training for the media to better report on and communicate climate change issues is also recommended.
8. The continuation of community level actions to build resilience, as well as awareness raising for parliamentarians, local authorities and the private sector.
9. Increasing areas rehabilitated in other severely degraded watersheds and declaring additional areas as Forest Reserves and Forest Management Areas
10. Encouraging rain water harvesting in Westphalia and other drought affected communities.
11. Enhancing the Forestry Department's Geo-referenced database by expanding it to an Enterprise Professional level to enable simultaneous user access in a bid to enhance efficiency and effectiveness.
12. The appointment of coordinators for individual agencies to establish a focal point for project in multi- agency managed projects and programmes.
13. The implementation of a petty cash system is recommended to ease the many trips to the bank to encash cheques to make small purchases.

<p>Name and title of Project Coordinator:</p> <p>Mary Ann Gooden Project Manager</p>	<p>Name of Project Supervisor:</p> <p>Claire Bernard Deputy Director General Sustainable Development and Social Planning</p>
<p>Signature: Date:.....</p>	<p>Signature: Date:</p>

7 Appendices

- Appendix 1: Performance Tracker Jan. 2011-Dec. 2013
- Appendix 2: List of Activities by Parishes
- Appendix 3: Alternative Livelihoods Initiatives
- Appendix 4: Revised Logframe
- Appendix 5: List of Documents Created Under CCA&DRRP
- Appendix 6: Consolidated Inventory of Expendable and Non Expendable Equipment - CA&DRRP, January 2011- December 2013
- Appendix 7: Pictorial Highlights of the CCA&DRRP
- Appendix 8: Consolidated Detailed Expenditure Report
- Appendix 9: Consolidated Summary Expenditure Report

8 Glossary

ACDI/VOCA	Agricultural Cooperative Development International and Volunteers in Overseas Cooperative Assistance
AV Kit	Audio Visual Kit
BBFFS	Bluefields Bay Fishermen's Friendly Society
C-CAM	Caribbean Coastal Area Management Foundation
CEP	Caribbean Environment Programme
CCA&DRRP-	Climate Change Adaptation & Disaster Risk Reduction Project
CSA	Continental Shelf Associates
EIA	Environment Impact Assessment
EMD	Environmental Management Division
EU	European Union
FD	Forestry Department
FMA	Forest Management Areas
FR	Forest Reserve
GIS	Geographic Information Service
GPS	Global Positioning Systems
GoJ	Government of Jamaica
LFMC	Local Forest Management Committee
MPAs	Marine Protected Areas
MOU	Memorandum of Understanding
Met	Metrological Services Jamaica
MoFP	Ministry of Finance & Planning
MWLECC	Ministry of Water Land Environment & Climate Change
MTGs	Modular Turbulence Generators
MBMP	Montego Bay Marine Park:
NEPA	National Environmental Planning Agency
NLA	National Land Agency
NOAA	National Oceanic and Atmospheric Administration
(NWA	National Works Agency
NCRPS	Negril Coral Reef Preservation Society:
NEPT	Negril Environmental Protection Trust:
NGO	Non Governmental Organisation
OVI	Objective Verifiable Indicators

ODPEM	Office of Disaster Preparedness & Emergency Management
OO	Outcome/output
PIOJ	Planning Institute of Jamaica (PIOJ)
PPCR	Pilot Project for Climate Resilience
PRML	Port Royal Marine Lab
PCA	Project Cooperation Agreement
PIU	Project Implementing Unit
PMU	Project Management Unit
PP	Project Purpose
PSC	Project Steering Committee
RADA	Rural Agricultural Development Authority
SRI	Sandals Resort International
SDC	Social Development Commission
SMART Indicators	Specific, Measurable, Attainable/Achievable, Relevant, Time bound
STEPA	St. Thomas Environmental Protection Association
ToRs	Terms of References
UNEP	United Nations Environment Programme
USA	United States of America
USAID	United States Agency for International Development
USFS	United States Forest Service
UWI	University of the West Indies
UDC	Urban Development Corporation

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