

**APPENDIX ONE – DEMONSTRATION PROJECTS IN SUPPORT OF SUSTAINABLE  
ISLAND RESOURCE MANAGEMENT**

The following section describes the more specific details relating to the objectives, deliverables, work-plans and budgets associated with the four targeted demonstrations to be carried out under the coordination and management of the Full Project.

These Demonstrations of specific SIRM issues are intended to provide opportunities to experiment with innovative management approaches and financial mechanisms in support of the sustainable management of natural resources and ecosystem functions within an economically healthy and expanding landscape.

Three of the Demonstrations are located in Antigua and one in Barbuda. The Demonstrations have been developed and selected on the basis that the lessons and best practices which will be generated by them will be highly replicable both in other parts of the country, and throughout the SIDS of the world, most of which share similar threats, root causes and barriers to integrated ecosystem-based management of their natural resources.

The activities undertaken within these Demonstrations will be closely linked to ongoing work within the Main Project, and close integration will be assured through the Project Coordination Committee, a body established for this purpose. Activities related to, for example, mapping, surveys, and zoning, will be feed into, and be articulated with, the relevant exercises carried out under specific Outcomes of the Project.

The four Demonstrations are:	Page
Rehabilitation of the Body Ponds Watershed _____	2
Integrated “ridges to reef” management of the SW coast of Antigua (Boggy Peak, Wallings Forest, Fig Tree Drive Forest and Cades Bay Marine Reserve) _____	15
Integrated Management of Codrington Lagoon and Planning the Sustainable Development of the waterfront (Barbuda) _____	26
Promoting best practices in waste water disposal water conservation and re-use in the North West tourism zone Antigua _____	36

Each Demonstration has an individual Logical Framework Analysis and Workplan attached.



inappropriate soil and water conservation practices, in part due to the current inadequate land use policy framework (coupled with the absence of land tenure), creates conflicts among land users. The majority of agricultural land is rented from the government or from private land owners on an annual basis so there is little incentive for farmers to take responsibility for protecting the soils. If leases are granted then they are usually only for a period of 5 years. Long-term leases of 25 years are available, but the application process is time-consuming and costly. Agriculture is no longer as profitable as it was, local farmers have to compete with imported produce, and this situation is likely to worsen with WTO. There is a need to consider alternative agricultural practices and therefore alternative livelihoods based on sustainable farming.

Stemming (reversing) the interlinked sequence of impacts and promoting more sustainable land management will require a cross-sectoral integrated approach with the full collaboration of the various management authorities (land use planning, forestry, agriculture soil conservation and water resources) with the active participation of the primary resource users (e.g. farmers, livestock owners). Since the ratification of the UNCCD in 1997, the Government of Antigua and Barbuda has implemented a few activities related to land degradation. A National Coordinating Mechanism (NCM) has been formed to bring together the stakeholders from various agencies to discuss these and other issues and to encourage networking. The proposed demonstration project will provide the opportunity to further develop a more collaborative participatory approach to rehabilitate one of the 13 main watersheds on Antigua.

#### Body Ponds Watershed

The watershed selected for this demonstration is Body Ponds (W2), which is the largest watershed on Antigua (4000 ha) that extends from John Hughes (inland) to Hanson's Bay (on the west coast). This watershed contains a large supply of surface (478,400 m<sup>3</sup> agricultural and municipal storage) and ground water reserves, and yields 390,000 million m<sup>3</sup>/ year. It is an important area for agriculture and livestock farming. Inappropriate land management has left the watershed heavily eroded and overrun by Lemon grass especially in the upper forested hilly areas (John Hughes, Swetes and Sawcolts). The watershed encapsulates all of main issues identified above (degraded forests, congested stream-ways and water storage, invasive species, overgrazing, unsustainable agricultural practices, ground water contamination) and the poor condition of the land has left the watershed vulnerable to extreme climatic events. As a result watershed function is impaired and in need of rehabilitation and protection.

In recognition of the present degraded state of the Body Pond watershed, the potential yield of ground and surface water, as well as the potential of the agricultural lands to contribute to expanding supplies (to the tourism industry), and to the national goal of food security, it is the intention that this project would serve as a model for the management and development of similar watersheds / hydrological units elsewhere on Antigua and in other small island developing states in the Caribbean. The project offers stakeholders the opportunity to actively participate in management activities. It is consistent with the operating principles related to Land Degradation, Biodiversity, and Climate Change and contribute to the achievement of SIRM objectives through protected area management approaches, invasive species management, sustainable farming, through planning, capacity building and institutional strengthening and promoting active stakeholder participation.

The **objective of the project** is to improve the integrated management of the largest watershed on the island of Antigua thereby ensuring the survival of remaining biodiversity, controlling an invasive species, promoting sustainable farming practices and restoring watershed function for the overall benefit of the nation.

#### **Pilot Site Outcomes and Outputs**

##### **Outcome A: Development of a Co-Management Strategy for Body Ponds Watershed**

- A.1 Establishment of a cross-sectoral Demonstration Steering Group
- A.2 Feasibility study for establishing a long-term co-management body for the watershed, with definition of roles and responsibilities
- A.3 Establishment of legal entity for co-management body
- A.4 Training and capacity needs assessments across sectors and groups involved in land and watershed management, particularly for the Forestry Division.

- A.5 Cross-sectoral training programme for land and resource users
- A.6. Training programme and institutional strengthening for management authority, including strengthening agency surveillance and compliance, and establishment of community wardens
- A.7 Public awareness and sensitization campaign to improve understanding of the need to prevent further land degradation.

**Outcome B: Management decisions are supported by accurate and updated information**

- B.1. Development of baseline assessment and mapping approaches
- B.2. Mapping and survey activities
- B.3. Reporting and feeding information into a Management Strategy
  - Vegetation surveys and mapping
  - Hydrological surveys
  - Land use surveys and mapping
  - Soil quality and land capability surveys and mapping
  - Socio-economic and demographic survey
  - Participatory mapping of bio-physical and socio-economic situation
  - Select sites and establish a long term monitoring programme
- B.4 Review of the land tenure arrangements in Body Ponds Watershed and recommended revisions.
- B.5. Establishment of a long-term monitoring program for the Demo area including water quality, soil loss and sedimentation to feed back into the EIMS.

**Outcome C: Development of integrated management tools: Guidelines for land and watershed restoration and Zoning and Management Plan**

- C.1 Preparation of Land Use Zoning and Management Plan
- C.2. Preparation of land and watershed restoration and rehabilitation guidelines - based on review (above) and revised using the lessons learnt captured from the implementation of the demonstration (below) - with associated regulations and activity guidelines, in participation with stakeholders to include regulations and guidelines for (a) protecting forest reserves and protected areas; (b) rehabilitation and replanting of degraded areas; (c) controlling grazing; (d) sustainable agriculture; (e) urban expansion zones and (f) protection of water courses and water storage.
- C.3. Stakeholder discussions and feedback into finalization of Zoning and Management Plan
- C.4. Zoning and Management Plan adopted

**Outcome D: Implementation of sustainable land management practices in the Body Ponds watershed**

- D.1 Acquisition and implementation of necessary infrastructure to protect woodland and forest reserves (e.g. transportation for wardens, fencing and signage).
- D.2 Protection of ground water aquifers and water storage facilities (e.g. removing silt and sediments and replanting boundaries).
- D.3 Rehabilitation of degraded areas and restoration of watershed function by demonstrating strategies:
- D.4 Establishment/adoption of pilot farms (x 2) to promote alternative agricultural practices including alternative livelihoods related to sustainable farming:
  - To minimize the use of agro-chemicals (e.g. crop rotation, double planting).
- D.5. Development of economic incentives and regulations to ensure that sustainable practices are maintained and replicated

**Outcome E: Development of financial sustainability mechanisms**

- E.1. Assess viability of payment for environmental services schemes in the watershed
- E.2. Negotiate establishment of payment for environmental services schemes with relevant stakeholder groups
- E.3 Develop and establish incentive schemes to encourage adoption of best practices in resource use, and by local companies (e.g. hoteliers) to purchase local produce
- E.4 Establish public private partnerships to support sustainable land use and agricultural practice

**End of Project Landscape (Outcomes)**

Co-management strategy developed, based on updated and reliable data and information related to the Body Pond watershed, and supported by targeted guidelines for land and watershed restoration. Review and reform of the land tenure arrangements and relevant legislation and preparation of a zoning plan, zoning activities guidelines and management plan. Sustainable land management systems in place for the utilization of land in the watershed, in accordance with capability. Measures in operation to protect water supply, and to ensure reasonable economic returns for farmers. Increased capacity, coordination and strengthened institutions for sustainable management of land use and protection of watershed function. Incentive schemes successful in encouraging changes in resource use practices and in supporting local productive activities.

#### **Stakeholders and Beneficiaries**

All stakeholders including the beneficiaries will participate throughout the life cycle of the project.

Beneficiaries include the following groups/organizations/entities:

- The Bendals Community Group
- The Environmental Awareness Group (EAG)
- Farmers
- Hotel owners
- Informal market traders
- Tourism industry
- The Environment Division
- Development Control Authority (DCA)
- The Ministry of Agriculture
- Central Marketing Corporation (CMC)
- The Antigua Public Utilities (APUA)
- Gilbert Agricultural And Rural Development Centre (GARDC)

The implementation of the project will collaborate with the Gilbert Agricultural And Rural Development Centre (GARDC), which is the leading NGO involved in training farmers and technicians in production methods. The Antigua Public Utilities (APUA), which manages the nation's water resources, has pledged full support for such an initiative. They will be represented on any management committee related to this project.

#### **Long term Sustainability Strategy**

The activities are designed to ensure long term sustainability of the management practices the management arrangements would include community-based groups through training and all soil and water conservation techniques will be within the means of the farmers.

#### **Replicability**

Lessons and Best Practices established by the Demonstration will be reviewed and captured through Outcome 4.5 of the Full Project. These activities will identify suitable areas and appropriate technologies/methodologies for replication. Lessons and Best Practices pertinent to the overall Antigua and Barbuda SIRM Plan, such as zoning modalities and monitoring strategies will also be replicated through the SIRM and associated reforms.

#### **Monitoring and Evaluation Process**

Through the M&E Plan adopted by the Full Project, through regular meetings and reports of the Project Coordination Committee, and through a cross-sectoral Steering Group which will report to the Full Project Coordinator and Manager on a quarterly basis.

**Logical Framework Analysis for Demonstration One:** Rehabilitation of the Body Ponds Watershed (3,238 ha)

**Demonstration Objective:** To promote sustainable land use and improve the management of the largest watershed (Body Pond Watershed W2) on Antigua.

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
A. Development of a co-management strategy for Body Ponds Watershed	Cross-sectoral decision-making process clearly defined and active through an established committee with evidence of full participation of stakeholders (including private sector, NGOs and community)	No effective cross-sectoral management mechanism or participatory process in place  Principle 4 of NEMS calls for establishment of management partnerships	<ul style="list-style-type: none"> <li>Cross-sectoral demonstration Steering Group established including appropriate representatives from private and public sector by 3<sup>rd</sup> month.</li> <li>Active participation from all sectors on a biannual basis.</li> <li>Clear records of participatory decisions supporting an integrated and sustainable management strategy throughout project life</li> </ul>	<ul style="list-style-type: none"> <li>Records of Steering Group meetings.</li> <li>Feedback from Steering Group members to Independent Evaluators.</li> <li>Positive stakeholder feedback on management approach (Mid and Terminal Evaluation reports)</li> </ul>	<ul style="list-style-type: none"> <li>Can maintain active interest of all parties to ensure comprehensive stakeholder participation.</li> <li>Body Ponds area declared protected area by 1<sup>st</sup> quarter of the 1<sup>st</sup> year</li> </ul>
	Watershed rehabilitation committee established and mandated by cabinet	No co-management authority for Body Ponds watershed formally established.	<ul style="list-style-type: none"> <li>Feasibility for establishment of formal co-management body for Body Ponds Watershed assessed by end of 2nd quarter of demonstration project.</li> <li>Structure and membership of co-management authority presented to Steering Group for approval.</li> <li>Co-management authority is a legal entity by end of 1st year of demonstration project.</li> </ul>	<ul style="list-style-type: none"> <li>Feasibility assessment available to Project.</li> <li>Availability of report confirmed by Evaluation Process (MTE &amp; TE).</li> <li>Legal status of co-management authority confirmed by Evaluation Process (TE).</li> </ul>	<ul style="list-style-type: none"> <li>Future political administrations continue to support co-management</li> </ul>
	Widespread and comprehensive awareness and understanding of the purpose of the demonstration activities by stakeholders within the demonstration	Limited awareness of the need to encourage sustainable agro-pastoralism and protect watersheds.	<ul style="list-style-type: none"> <li>Awareness materials developed during 4th quarter of 1st year.</li> <li>Awareness raising activities implemented between the 4th quarter of the 1st year and 2nd quarter of the 2nd year.</li> </ul>	<ul style="list-style-type: none"> <li>Stakeholders all aware of demonstration project activities.</li> <li>Records of attendance and minutes of stakeholder meetings and of Steering Group minutes.</li> <li>Newspaper articles /</li> </ul>	<ul style="list-style-type: none"> <li>Awareness raising material effectively relays the intended message.</li> </ul>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	project system boundary			<p>media reports to raise awareness of stakeholders of consultation process.</p> <ul style="list-style-type: none"> <li>Receipts of expenditure on at least 3 stakeholder meetings with details of attendance.</li> <li>Comprehensive evidence of awareness raising through materials and through stakeholder feedback confirmed through Independent Evaluation (MTE&amp;TE).</li> </ul>	
Development of public - private partnerships for watershed management.	Development of public - private partnerships for watershed management.	Limited training and capacity building at present, and not focused on watershed management	<ul style="list-style-type: none"> <li>Training needs and capacity of stakeholder groups involved in demonstration project (including NGOs, farmers etc.) assessed by third month.</li> <li>Cross -sectoral training programme and workplan developed.</li> <li>Training programmes implemented in 2nd quarter of 1st year.</li> <li>3 workshops 3 training courses.</li> </ul>	<ul style="list-style-type: none"> <li>Training needs and capacity assessment documented.</li> <li>Evidence of training programme and workplan.</li> <li>Records of attendance.</li> <li>Documentation confirmed through Independent Evaluator (TE).</li> </ul>	Stakeholders willing to participate in training programme.

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
<p><b>B. Management decisions are supported by accurate and updated information</b></p>	<p>Body Ponds watershed surveys and maps available to input into EIMS and incorporated into the ecosystem planning framework</p>	<p>No recent comprehensive surveys or mapping of Body Ponds watersheds. Management decisions are not based on comprehensive information</p>	<ul style="list-style-type: none"> <li>• Remote sensing data acquired and available to Project at end of 1st quarter of demonstration project.</li> <li>• Existing datasets compiled and reviewed and gaps identified by end of 1st quarter.</li> <li>• Draft survey methods manual and sampling strategy available by end of 1st quarter.</li> <li>• Surveys undertaken, data analysed and maps prepared by end of 1st year of demonstration project.</li> <li>• Maps available by end 1<sup>st</sup> year of project to show vegetation types, soil types, topography, location of stream ways, aquifers and water storage facilities, villages, roads, infrastructure, population density, resource use, private and public land, location of survey sites etc.) available to Project.</li> <li>• Receipts of expenditure for survey equipment etc.</li> <li>• Lessons and best practices available to Project.</li> <li>• Content of EIMS and availability of reports and methods manual confirmed by Independent Evaluator (MTE &amp;TE).</li> </ul>	<p>Draft survey methods manual and sampling strategy documented. Final survey methods manual and survey reports and thematic maps and data layers (showing vegetation types, soil types, topography, location of stream ways, aquifers and water storage facilities, villages, roads, infrastructure, population density, resource use, private and public land, location of survey sites etc.) available to Project. Receipts of expenditure for survey equipment etc. Lessons and best practices available to Project. Content of EIMS and availability of reports and methods manual confirmed by Independent Evaluator (MTE &amp;TE).</p>	



OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	<p>Long term monitoring programme and reporting for water quality, soil loss and sedimentation established within Body Ponds area (with suitable control sites in another watershed), and data, reports and lessons and best practice available through EIMS.</p>	<p>No long term monitoring sites established in Body Ponds watershed except for water quality and depth of water table. Occasional testing for salinity, ions, BOD</p>	<ul style="list-style-type: none"> <li>• Long term monitoring (incl. control sites) and reporting for water quality, soil loss and sedimentation established by end of 1st year of demonstration project.</li> <li>• Raw data and monitoring reports available through EIMS</li> <li>• Monitoring surveys carried out at 6 month intervals during 2nd year.</li> <li>• Lessons and best practice captured and available to main Project.</li> <li>• Significant changes detected in long term monitoring data (water quality, soil loss, sedimentation) by 2nd quarter of 2nd year of project.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring sites (and control sites) for water quality, soil loss and sedimentation established, and report available to Project.</li> <li>• Monitoring data and reports entered in EIMS</li> <li>• Documentation confirmed by Independent Evaluator (MTE &amp; TE).</li> </ul>	<p>Long-term maintenance and monitoring management of monitoring sites. Sites not damaged due to hurricanes, storms or vandalism</p>
<p><b>C. Development of integrated management tools: guidelines for land watershed restoration and zoning plan</b></p>	<p>Guidelines on land and watershed restoration techniques (methods to remove and eradicate invasive species, replanting of native species, soil conservation techniques, methods to protect aquifers and water storage facilities etc.) available through EIMS.</p>	<p>No recent review of watershed restoration approaches applicable within SIDS in the Caribbean. No guidelines on land and watershed restoration.</p>	<p>Review of restoration approaches and techniques used in other SIDS in the Caribbean available to demonstration project by end of 2nd quarter of demonstration project. Guidelines for land and watershed restoration prepared by end of 2nd quarter of demonstration project, made available to national project.</p>	<p>Review of restoration approaches available to Project. Guidelines presented to Steering Group as show in minutes. Review and Guidelines available to national Project through EIMS. Availability of review and guidelines confirmed by Independent Evaluator (MTE &amp; TE).</p>	<p>Review reveals suitable approaches and techniques of relevance to local situation. Steering Group willing to accept guidelines.</p>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	<p>Recommended revisions to Land tenure arrangements adopted by Government.</p>	<p>Land tenure arrangements currently typically for 5 years - long land tenure arrangement procedures difficult to obtain.</p>	<p>Recommendations for improvements to land tenure arrangements completed by end of 2nd quarter of demonstration project. Land tenure arrangements and procedures amended by Government by end of Project.</p>	<p>Report on recommended revisions to land tenure arrangements available to Project confirmed by MTE. Evidence of revision being submitted to Government confirmed by MTE. Revisions being adopted by Government and reports from stakeholders of improvements to application procedure confirmed by Evaluation Process (TE).</p>	<p>Land use plan for Antigua and Barbuda is adopted  Government recognise the need to revise land tenure arrangements and willing to make necessary revisions within the timescale of the Project.</p>
	<p>Body Pond Zoning and Management plan prepared in consultation with local stakeholders and available to Project for inclusion in SIRM zoning plan (Output 2.1).</p>	<p>No zoning or management plan for Body Ponds watershed.</p>	<ul style="list-style-type: none"> <li>• Widespread awareness and sensitisation of all stakeholders to zoning process from the outset of project through stakeholder workshops (beginning, middle and end).</li> <li>• Draft zoning plan and associated activity guidelines and regulation, for Body Ponds watershed prepared by end of 1st year.</li> <li>• Discussion and review of draft zoning plan and associated regulations and guidelines.</li> <li>• Final zoning plan, associated regulations and activity guidelines and Management plan prepared by month 18, presented to co-management group and adopted, and present to National Coordination Mechanism for inclusion in national SIRM zoning plan in Year 2.</li> </ul>	<p>Zoning and Management Plan available to Project for inclusion in SIRM Zoning Plan. Confirmed by Independent Evaluator (MTE).</p>	<p>Key stakeholder groups, both in private and public sectors, accept the Body Ponds Zoning and Management Plan.</p>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
<p><b>D. Implementation of sustainable land management practices in Body Ponds watershed</b></p>	<p>Watershed function improved by end of project and statistically significant improvements and techniques captured in EIMS and available to national Project as lessons and best practices.</p>	<p>Watershed function degraded. No active protection for forested areas within watershed. Limited protection of water storage facilities and aquifers. No active restoration / rehabilitation of degraded habitats within Body Ponds watershed.</p>	<ul style="list-style-type: none"> <li>Activities to rehabilitate degraded areas started in 3rd quarter of 1st year demonstration project.</li> <li>Infrastructure for protection of forest reserves procured and available by end of 3rd quarter and deployed by end of 1st year of demonstration project.</li> <li>Protection of aquifers and water storage facilities implemented 3rd quarter of 1st year and completed by 3rd quarter of 2 year of demonstration project.</li> <li>50% land management practices implemented</li> <li>Complete proportion of areas to be rehabilitated by end of 3rd quarter of 2nd year. By end of demo. Project 75% of forest reserves protected, signage and infrastructure in place. Fire strips cut around forest reserves 75% of aquifers and water storage facilities within watershed protected.</li> <li>50% of citronella grass area cleared.</li> <li>80% of stream ways cleared of sedimentation.</li> <li>80% of grazing ruminants relocated, removed / eradicated from sensitive areas.</li> <li>30% of stream ways replanted.</li> <li>50% of degraded mangrove area replanted.</li> <li>No fires burnt within watershed.</li> <li>Significant changes detected in long term monitoring data (water quality,</li> </ul>	<p>Purchase orders for equipment, infrastructure and signage to protect and rehabilitate degraded areas.</p> <p>Rehabilitation activities recorded using GPS and area rehabilitated shown on maps in EIMS.</p> <p>Statistically significant changes in comparison with control sites (reduction in soil loss &amp; sedimentation, &amp; increase in coastal and fresh water quality), as shown in monitoring reports available to Project.</p> <p>Documentation and evidence confirmed by Independent Evaluator (MTE &amp; TE).</p>	<p>Necessary infrastructure and signage obtainable.</p> <p>No problems encountered in deployment of infrastructure and signage (land access, vandalism etc).</p> <p>Rehabilitation techniques chosen work effectively within this environment.</p>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	Sustainable agricultural methods demonstrated on pilot farms and appropriate methods and alternative technologies captured in EIMS and available to national Project, lessons and best practice.	No pilot farms included in the demonstration project. No sustainable agricultural practices implemented on pilot farms	<p>soil loss, sedimentation) by 2nd quarter of 2nd year of project.</p> <ul style="list-style-type: none"> <li>Pilot farms assessed and suitable farms identified during the 2nd quarter of first year of demonstration project.</li> <li>Sustainable agricultural practices implemented on both farms during the 1st and continued into 2nd year of demonstration project.</li> <li>Farm 1 to demonstrate a reduction in agro-chemicals through crop rotation, double planting), and establish a grey water re-use scheme;</li> <li>Farm 2 to demonstrate alternative technologies (e.g. hydroponics), and organic farming methods.</li> <li>Both farms to demonstrate land clearance methods and fire control (cutting strips).</li> </ul>	<ul style="list-style-type: none"> <li>Farm selection process, clearly documented through minutes of Steering Group</li> <li>Sustainable agricultural methods and alternative technologies implemented on both pilot Farms, documented through Project.</li> <li>Lessons and Best Practice for sustainable agricultural practices input into EIMS as case studies and available to main Project.</li> <li>Documented evidence on alternative methods and technologies confirmed through Independent Evaluator (TE).</li> </ul>	<p>Possible to identify suitable farms to participate in demonstration.</p> <p>Continued willingness of farm to participate for the duration of the project despite potential loss of productivity / income during first trial year.</p>
	Water storage capacity of dams and reservoirs in the project area increased through maintenance and erosion control practices	Dams and ponds are heavily silted reducing water capacity by at least 30%	<ul style="list-style-type: none"> <li>Storage capacity of dams and reservoirs increased by 15% by Y2 and 30% by Y3</li> </ul>	<ul style="list-style-type: none"> <li>Reports of the Forestry Division</li> </ul>	
	# of farm applying integrated pest management practices	no data has been collected	<ul style="list-style-type: none"> <li>35% farms by Y2</li> <li>75% farms by Y3</li> </ul>	<ul style="list-style-type: none"> <li>Internal project monitoring and reporting</li> <li>MTE and TE</li> <li>Project reports</li> </ul>	

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
<b>E. Development of financial sustainability mechanisms</b>	Improvement in phosphate levels end of project	No baseline data collected	<ul style="list-style-type: none"> <li>30% improvement by year 3</li> </ul>	<ul style="list-style-type: none"> <li>Internal project monitoring</li> </ul>	
	Assessment of viability of Payment for Environmental Services in the watershed to ensure financial sustainability of proposed management approaches	No PES schemes in place	<ul style="list-style-type: none"> <li>Review of upstream-downstream users based on Cost-Benefit Analysis (Output 2.2) by 9 months</li> <li>Facilitation of a dialogue between upstream and downstream users by end year 1</li> <li>Assessment of the capacity of local producers/farmers to access credit and advance towards self-financing by end year 1</li> </ul>	<ul style="list-style-type: none"> <li>Review document available to NCM</li> <li>Minutes of stakeholder meetings</li> <li>Assessment document available to NCM</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient will on the part of relevant authorities to put in place requisite conditions for developing sustainable financial mechanisms.</li> </ul>
	New fiscal incentives for sustainable use of natural resources identified and adoption in process or planned	No incentives in place incentives such as soft loans reduction in taxes need for this to happen (outside our control)	Suite of incentive schemes support implementation of SIRM approaches	<ul style="list-style-type: none"> <li>Project reports</li> <li>State tax registers</li> </ul>	<ul style="list-style-type: none"> <li>Relevant government agencies willing to put incentives in place</li> </ul>
	Public private partnerships for sustainable land use and agricultural practices established. At least 1 farming cooperative established and farmers report increased profits by Year 3	No public private partnerships established. No farming cooperative within the Body Ponds watershed. No policy or incentives exists	<ul style="list-style-type: none"> <li>Potential Public Private Partnerships identified by 9 months.</li> <li>At least 1 perhaps 2 Public Private Partnerships established during demonstration Project.</li> <li>Stakeholder consultation with farmers within the Body Ponds watershed within 2nd quarter of 1st year.</li> <li>Farming cooperative established by end of 1st quarter of second year.</li> </ul>	<ul style="list-style-type: none"> <li>2 Public Private Partnerships established.</li> <li>Records of Steering Group minutes.</li> </ul>	<ul style="list-style-type: none"> <li>Suitable Public Private Partnerships can be identified.</li> </ul>
				<ul style="list-style-type: none"> <li>Farming cooperative established. Records of Steering Group meetings.</li> <li>Feedback from stakeholders on cooperative. Confirmed through Evaluation Process.</li> </ul>	<ul style="list-style-type: none"> <li>Farmers willing to establish cooperative.</li> <li>Ministry of Agriculture establishes incentives for establishment of farmers cooperative policy</li> </ul>

## WORKPLAN FOR DEMONSTRATION ONE

DEMO OUTCOME		DELIVERABLE		YEAR 1		YEAR 2	
A. Development of a co-management strategy for Body Ponds Watershed	A.1	Adoption of a cross-sectoral demonstration steering group		X			
	A.2	Assess feasibility for establishing a localised body for management of the Body Ponds Watershed (to evolve from demo steering group)		X			
	A.3	Establishment of a legal entity for co-management within the Body Ponds Watershed				X	
	A.4	Cross-sectoral training and capacity needs assessments		X			
	A.5	Cross-sectoral training programmes for land and resource users			X	X	X
	A.6	Training programme and institutional strengthening for management authority			X	X	X
	A.7	Public Awareness and policy sensitisation campaign			X	X	X
B. Management decisions are supported by accurate and updated information	B.1	Development of Baseline Assessment and Mapping Approaches and designation of field-teams		X			
	B.2	Mapping and Survey Activities			X	X	
	B.3	Reporting on results and feeding into Management Strategy (and into main project Outcome 1 as lessons and best practices for national baseline assessment and mapping)					X
	B.4	Review and recommended improvements to land tenure arrangements			X	X	
	B.5	Establish long-term monitoring approach within Demo area linked to main EIMS					X
C. Development of integrated management tools: guidelines for land watershed restoration and zoning plan	C.1	Preparation of guidelines for land and watershed restoration			X		
	C.2	Preparation of participatory land-use zoning plan				X	
	C.3	Stakeholder discussions and feedback into development and finalization of Zoning and Management Plan		X		X	
	C.4	Zoning and Management Plan agreed by stakeholders, adopted by co-management authority and submitted to Government					X
D. Implementation of sustainable land management practices in Body Ponds watershed	D.1	Procurement and deployment of protection infrastructure for forest reserves			X		X
	D.2	Programme of protection activities for aquifers and water storage facilities			X		X
	D.3	Rehabilitation of degraded areas and restoration of watershed functions			X		X
	D.4	Establishment of pilot farms for alternative agricultural practices			X		X
	D.5	Development of economic incentives and regulations to ensure that sustainable practices are maintained and replicated				X	X
E Development of financial sustainability mechanisms	E.1.	Assess viability of payment of environmental services schemes in the watershed (an input to Output 3.4)		X			
	E.2	Negotiate establishment of payment for environmental service schemes with relevant stakeholder groups			X	X	X
	E.3	Establishment of incentive schemes for local purchase of farm products			X		X
	E.4	Establishment of Public-Private partnerships for sustainable land-use and agricultural practices			X		X



island (Doiggs, Barta, Rendezvous, Boggy Peak and Christian Valley) that is in need of special conservation management. The entire south west coast of Antigua has spectacular scenery with off-shore coral reefs, mangroves, sandy beaches backed by the mountains with tropical moist forests which has made it a major tourist attraction on the island. Coupled with traditional uses in these resources, the collective value of these assets to the country's economic sectors can not be underestimated. While tourism development has already impacted the coastal resources in this area (e.g. removal of mangroves for the Carlisle Bay Hotel) the area is not as heavily developed as the NW tourism zone. The country's needs to expand the tourism potential and promote economic growth may result in more environmental decline if the proper measures are not put in place.

While each of the assets could be managed individually there would be several additional benefits accrued from embedding these areas within a broader integrated management framework. There would be economical advantages due to the economies of scale to be gained from developing and promoting the entire SW region as a premiere eco-tourism destination, for example. The most compelling evidence for embedding these areas in an integrated management framework however relates to the impacts of land-based sources of pollution on coastal and marine system. Coral reef health around Antigua has declined over the years and recent studies have shown that the decline is most likely due to a series of human induced and natural impacts, rather than one single catastrophic event. The most likely cause of the decline is cumulative impacts of increasing sediment loads as a direct result of drought conditions, coastal erosion and removal of healthy mangrove forests (coupled with anchor damage from boating activities, storm and hurricane damage as well as natural disease, and predation). This therefore requires zoning for sustainable use and maintenance of ecosystem functionality within the landscape SW region.

The purpose of this project is to establish an integrated management plan for the SW region that incorporates an interlinked chain of marine and forest reserves to protect both the key biodiversity assets and the functional habitats within this environmentally sensitive area. The need to sustain economic growth often overshadows conservation goals and it is therefore important that any activities are financially sustainable and provide real benefits to the local communities. WF currently receives an average 10,000 visitors per annum from cruises and stay over visitors, along with local individuals and groups. This level of interest has already generated local benefits and increased business for local entrepreneurs such as taxi drivers, guides, and local shops and stalls. The inclusion of FTDF and CR and possibly Boggy Peak will only add to the ongoing economic buoyancy of this natural area. A willingness to pay study has shown that the WF would be able to generate revenues to support management activities if the systems were in place to retain these revenues.

In order to engender support and active participation in the development of the area the proposed project will adopt a co-management approach to ensure that the key assets are protected in parallel with developing the potential for the site as an eco-tourism destination, to encourage outdoor recreation, learning and research. The development of the eco-tourism potential in the area through co-management will generate revenues to support their management and to the benefit the local community. To ensure the activities are environmentally sustainable the carrying capacity of the area will be determined as a matter of priority, and programme implemented to monitor the effects of ecotourism on the biodiversity and overall ecology of the area(s) remains.

The **objective** of the project is to conserve the natural assets on the south west coast of Antigua through integrated management to ensure the maintenance of the ecosystem integrity and sustainable use to generating revenues for conservation management and for the benefit of the local communities.

#### **Pilot Site Outcomes and Outputs:**

The expected outputs are:

##### **Outcome A. An effective Multi-level Co-management Group established**

- A.1. Establish a Co-management Group, with representatives from the different local communities, and relevant agencies to co-ordinate project activities (National Parks Authority, Ministry of Agriculture, Fisheries Division, Forestry Division, Environment Division etc. local CBOs and NGOs) based on stakeholder consultations on ecosystem level planning
- A.2. Define roles and responsibilities within the Co-Management Group
- A.3. Cross-sectoral training and capacity needs assessment



- A.4 Capacity building and training for co-management authority
- A.5. Training exercises and workshops for ecotourism stakeholders (wardens, tour guides, dive operators)
- A.6. Public awareness and policy sensitisation

**Outcome B: Management decisions based on updated and accurate information**

- B.1. Development of baseline assessment and mapping approaches
- B.2. Mapping and survey activities
- B.3. Determine carrying capacities for commercial activities in SW region
- B.4. Determine infrastructure requirements in relation to carrying capacities (e.g. mooring buoys, signed walkways, snorkelling trails).
- B.5. Establishment of monitoring programme for management effectiveness (including bio-physical, social and governance indicators)

**Outcome C: Co-management scheme strengthened through installation of requisite infrastructure**

- C.1. Procurement and installation of supportive infrastructure related to tourism and parks management. e.g.
  - Construction of an information centre and rest rooms (e.g. composting toilets)
  - Improvement of existing trails.
  - Construction of new trails in the FTDF and BP
  - Development of parking areas for patrons and staff.
  - Construction of three (3) gazebos.
  - Development of hides and bird watching trail
  - Establish signs, walkways and trails.
  - Establish marker buoys and
  - Procure and establish moorings buoys
  - Procure small patrol boat to regulate activities

**Outcome D: Multi-level zoning and co-management plan supported through realignment of legislation and policy**

- D.1. Review of policy, legislation and regulations affecting proposed management and zoning plan
- D.2. Recommendations for policy and legislative reforms to support co-management plans and provide for financial sustainability based on stakeholder consultations
- D.3. Development of regulations and guidelines based on findings for inclusion in policy and legislative review and management strategy
- D.4. Stakeholder discussions and feedback into development and finalisation of a zoning plan
- D.5. Final Management and Zoning Plans adopted

**Outcome E: Financial revenue generated to support sustainability of management plan**

- E.1. Review of potential financial and fiscal instruments for sustainability (e.g. willingness to pay survey for Cades Marine Reserve, Boggy Peak and the extended combined network of reserves), including incentive schemes to encourage adoption of best practices and establishment of partnerships
- E.2. Definition of fee structures and revenue collection mechanisms, through participatory consultations with key stakeholder groups
- E. 3. Development of incentive schemes to ensure that sustainable practices are maintained and replicated

**End of Project Landscape (Outcomes)**

Management and Zoning Plan for Wallings Park, Fig Tree Drive and Cades Reef including clear definition of the regulations pertaining to the different zones. Ecosystem functionality and integrity, including landscape values and biodiversity resources, provided for, thus reversing current degradation trends.

**Stakeholders and Beneficiaries**

Stakeholder participation, sensitization and training is key to achieving success in any management system that is being developed as these groups both benefit from and impact on the resources. It is

envisioned that the project would be administered by the government agency with direct responsibility for the management and conservation of marine resources. The Fisheries Division could take on the role as lead agency for the project in partnership with the Environment Division. Other partner organisations may include: the Forestry Unit, Environmental Awareness Group, fisherman's cooperatives in the area, tour operator groups and any other interest group for whom the project may hold particular relevance. The stakeholders and beneficiaries of the biological resources of the WF and FTDF include the inhabitants of the surrounding communities of John Hughes, Saw Colts, Old Road and Swetes. These communities all have historical and cultural links to the WF, FTDF and the Wallings Reservoir, which have supplied water, fuel-wood, building material, food in the form of wild fruits, and other minor forest produce such as "wattle" for the construction of fish traps, as well as recreational facilities. Consultations will be held with these stakeholders to measure the impact of this project on their economic and social livelihoods and to arrive at methods to minimize negative impacts and maximize positive benefits resulting from the project and to incorporate as far as possible continuity of these livelihoods in a sustainable manner.

### **Long term Sustainability Strategy**

Tourism has been the leading economic sector in Antigua and will remain so for the foreseeable future. WF has demonstrated its potential for eco-tourism, which is the fastest growing segment of the tourism industry. Current visitation rates, even with the limited level of development, are approximately 10,000 visitors per annum, including tourists and locals.

In Wallings Forest, the intention is to begin charging a fee for the entrance and use of resources and to use the funds generated, together with Government's contribution, to maintain the area. A Contingent Valuation Method (CVM) survey and analysis was carried out in order to determine the potential economic value of the WF and FTDF, within the context of a protected area, and to determine whether it can be self-sufficient and sustainable in its operation and management. The results of the study, with respect to the mean Willingness to Pay (WTP) values for the four (4) groups in the survey, as well as a summary of aggregate WTP values for alternative visitation levels were determined. For example, local residents who completed the questionnaire were willing to pay on average, US\$6.00 to enter the upgraded WF and FTDF. If ten thousand (10,000) persons visited the site, then the park could expect to make US\$60,000. However, recognizing the fact that several factors must be taken into account when establishing user fees, even if the entrance fee was initially set at EC\$5.00 (or US\$1.85), then the WF and FTDF could expect to generate revenue of EC\$50,000 (or US\$18,519).

The project will build upon these experiences and undertake a review to identify the most appropriate mechanisms to financially support the co-management of Cades and Boggy Peak to ensure sustainability. This will be achieved through the implementation of a range of studies, including the level of use in the area, willingness to pay by visitors, and comparison of effective economic instruments in countries of the region / globally.

### **Replicability**

Lessons and Best Practices established by the Demonstration will be reviewed and captured through Outcome 4.5 of the Full Project. These activities will identify suitable areas and appropriate technologies/methodologies for replication. Lessons and Best Practices pertinent to the overall Antigua and Barbuda SIRM Plan, such as zoning modalities and monitoring strategies will also be replicated through the SIRM and associated reforms.

### **Monitoring and Evaluation Process**

Through the M&E Plan adopted by the Full Project, through regular meetings and reports of the Project Coordination Committee, and through a cross-sectoral Steering Group which will report to the Full Project Coordinator and Manager on a quarterly basis.

**Logical Framework Analysis for Demonstration Two:** Integrated “ridges to reef” management of the SW coast of Antigua (2.428 ha) (Boggy Peak, Wallings Forest, Fig Tree Drive Forest and Cades Bay Marine Reserve)

**Demonstration Objective:** To implement integrated management to promote the maintenance of the environmental integrity, conserve key assets with active stakeholder participation, and to generate revenues to support management activities

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
A. An effective multi-level Co-management Group established	Cross-sectoral decision-making process clearly defined and active through an established Group with evidence of full participation (including private sector, NGOs and community)	No effective cross-sectoral management mechanism or participatory process in place Walling area loosely protected under the Forested Act Cades Bay declared protected under fisheries act but not managed	<ul style="list-style-type: none"> <li>Cross-sectoral demonstration Co-Management Group established including appropriate representatives from private and public sector by end of 1st quarter of demonstration project.</li> <li>Active participation from all sectors on a biannual basis. Clear records of participatory decisions supporting an integrated and sustainable management strategy</li> </ul>	<ul style="list-style-type: none"> <li>Records of CG meetings.</li> <li>Feedback from CG members to Independent Evaluators.</li> <li>Positive stakeholder feedback on management approach (Mid and Terminal Evaluation reports)</li> </ul>	<ul style="list-style-type: none"> <li>Can maintain active interest of all parties to ensure comprehensive stakeholder participation.</li> <li>Area declared as protected by 1<sup>st</sup> quarter of year 1</li> </ul>
	Roles and responsibilities within the Co-Management Group defined	No effective cross-sectoral management mechanism or participatory process in place	<ul style="list-style-type: none"> <li>Key stakeholder groups within the project area, including resource users such as farmers and fishermen, as well as representatives of the tourism industry, committed to implementation of the Co-management Plan through clearly defined roles and responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>Records of CG meetings</li> <li>TORS for CG</li> </ul>	
	Targeted cross-sectoral training programme developed (including private sector, NGOs and community) and implemented based upon needs assessment.	No cross-sectoral training programme established in SW region.	<ul style="list-style-type: none"> <li>Training and capacity needs assessment of relevant stakeholders (NGOs, private sector and local community) completed by end of 1<sup>st</sup> year.</li> <li>Training materials developed and made available to Project.</li> <li>Training programme implemented including training exercises for park wardens, staff and other stakeholders on 3 separate occasions and training for co-management authority on 2 separate occasions.</li> </ul>	<ul style="list-style-type: none"> <li>Evidence of training and capacity needs assessment.</li> <li>Records of the stakeholders groups assessed and the training and capacity needs identified.</li> <li>Training programme workplan and training materials developed through the Project available for use at national level.</li> </ul>	<ul style="list-style-type: none"> <li>Training programme developed is of interest to stakeholders and they are willing to participate</li> </ul>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
<p><b>B. Management decisions based on updated and accurate information</b></p>	<p>SW watershed surveyed and mapped, and data and reports input into EIMS. Lessons and best practice available to Project for national baseline assessment.</p>	<p>No standard survey methods or approaches to mapping watersheds. No recent comprehensive surveys or mapping of watersheds. General Map showing vegetation types, soil types available from Forestry Division.</p>	<ul style="list-style-type: none"> <li>Remote sensing data acquired and available to Project at end of 1st quarter of demonstration project.</li> <li>Existing datasets compiled and reviewed and gaps identified by end of 1st quarter</li> <li>Draft survey methods manual available for use by the Project by end of 1st quarter.</li> <li>Survey methods, data and mapping and reporting on watershed completed by end of 1st year of demonstration project.</li> <li>Maps available of the following: <ul style="list-style-type: none"> <li>vegetation types (including coastal vegetation), coral reefs and other benthic habitats, soil types, topography, location of streamways, aquifers and water storage facilities, villages, roads, infrastructure, population density, terrestrial, coastal and marine resource use (fishing grounds, dive sites etc.), private and public land, location of survey sites etc.</li> </ul> </li> <li>Data, methods, reports, maps and lessons and Best Practice input into EIMS by end of 1st year of demonstration project, and available for national project.</li> </ul>	<ul style="list-style-type: none"> <li>Records of attendance of training courses by park staff, wardens, tour guides and stakeholders.</li> <li>Records of attendance of training courses for co-management authority.</li> <li>Documentation and CG Minutes confirmed by Independent Evaluator.</li> <li>Draft survey methods manual and sampling strategy available for review by CG</li> <li>Final survey methods manual, data, reports and thematic maps and data layers input into EIMS and available for review by CG, and to the Project as lessons and best practice for national baseline assessments.</li> <li>Documentation and Steering Group minutes confirmed by Independent Evaluator (MTE &amp; TE).</li> <li>Receipts of expenditure on survey equipment.</li> </ul>	<p>Remotely sensed images at an appropriate resolution are available.</p> <p>Available technical expertise to process image. Sufficient capacity to undertake surveys, methods and sampling strategy appropriate (adequate number of sites etc).</p> <p>No logistical problems encountered in completing surveys (e.g. problems with land access).</p>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	<p>Long term monitoring programme (environmental and socio-economic) and reporting system established, with data being regularly input into EIMS. Lessons and best practice made available to project national programme.</p>	<p>No long term monitoring programme established in SW region.</p>	<ul style="list-style-type: none"> <li>• Long term monitoring and reporting for environmental and socio-economic indicators established by end of 1st year of demonstration project.</li> <li>• Raw data and monitoring reports available through EIMS</li> <li>• Monitoring surveys carried out at 6 month intervals during 2nd year.</li> <li>• Lessons and best practice captured and available to main Project.</li> <li>• Improvements detected in long term environmental and socio-economic monitoring data end of 2nd year of project.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring programme and reporting for environmental and socio-economic surveys established and data, reports entered into EIMS.</li> <li>• Receipts of expenditure on survey equipment.</li> <li>• Monitoring surveys showing positive impacts of the demonstration project.</li> <li>• Documentation and improvements in environmental and socio-economic conditions confirmed by Independent Evaluator (MTE &amp;TE).</li> </ul>	<p>Possible to establish and permanently mark monitoring sites. Monitoring sites not damaged / vandalised / built on. EIMS operational and ready to accept data input.</p>
<p><b>C. Co-management plan strengthened through installation of requisite infrastructure</b></p>	<p>Infrastructure requirements for tourism and parks management procured and deployed</p> <p>No carrying capacity assessments exist for the three areas targeted by the project</p>	<p>Limited infrastructure to support commercial tourism activities available in region.</p> <ul style="list-style-type: none"> <li>• Carrying capacity of SW tourism region assessed during the 1st year of the Project.</li> </ul>	<ul style="list-style-type: none"> <li>• Necessary infrastructure procured and deployed during 2nd year of demonstration project including construction of information center, rest rooms, and three gazeboes; establishment of marker buoys and mooring buoys; improvement of existing trails and establishment of new ones</li> <li>• Report on carrying capacity study and identification of infrastructural requirements for tourism and parks management.</li> <li>• Report reviewed and discussed by CG</li> </ul>	<ul style="list-style-type: none"> <li>• Co-management Group minutes and receipts of expenditure on infrastructure, and evidence of its deployment confirmed by Independent Evaluator (MTE &amp;TE).</li> <li>• Technical capability to adequately assess carrying capacity of SW region..</li> </ul>	<p>Infrastructure is maintained and not destroyed by storm events or vandalism</p> <p>Carrying capacity for commercial activities in SW region assessed and.</p>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
<p><b>D. Multi-level zoning and co-management plan supported through realignment of legislation and policy</b></p>	<p>Zoning and management plan for SW watershed and coastal area supported by appropriate policies and legislation, adopted by Government.</p>	<p>Policies and legislation inadequate do not support the protection of the SW region. No zoning or management plan for the SW region.</p>	<ul style="list-style-type: none"> <li>• Widespread media input to raise awareness of zoning process.</li> <li>• Stakeholder meetings capturing full participation of stakeholders on at least 3 separate occasions (beginning, mid and end) during the development of the zoning and management plans.</li> <li>• Understanding and support for the development of zoning plan by all stakeholders.</li> <li>• Draft zoning plan, regulations and activity guidelines for SW watershed and coastal area prepared by end of 1st year of demonstration project.</li> <li>• Policies and legislation reviewed and revision made to accommodate for new zoning regulations and guidelines.</li> <li>• Awareness raising material for draft zoning plan (leaflets, Government website, newspaper articles and media reports) prepared and distributed by end of 1st year of demonstration project.</li> <li>• Final zoning plan agreed by stakeholders, adopted by co-management authority and submitted to Government by 2nd quarter of 2nd year and adopted.</li> </ul>	<ul style="list-style-type: none"> <li>• Evidence of awareness raising in newspaper articles / media reports to raise awareness.</li> <li>• Records of attendance and minutes of stakeholder meetings and minutes of Steering Group.</li> <li>• Receipts of expenditure on 3 stakeholders</li> <li>• Zoning Plan available for inclusion in national SIRM Zoning Plan.</li> <li>• Review of legislation and policies documented.</li> <li>• Evidence of draft zoning plan, regulations and activity guidelines.</li> <li>• Final zoning and management plan evidence in minutes of co-management authority.</li> <li>• Confirmed by Independent Evaluator (TE).</li> </ul>	<p>Co-management Group and key stakeholder groups willing to accept zoning plan.</p>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
<p><b>E. Financial revenue generated to support sustainability of management plan</b></p>	<p>Realistic and effective financial instruments in place to support long-term sustainable and participatory co-management of the area</p>	<p>No fees structures currently in place or under consideration. Limited information on the suitability of financial instruments.</p>	<ul style="list-style-type: none"> <li>• Recommendations on a Financial Instrument completed by end of 2nd quarter.</li> <li>• Sustainable financial instrument formal adopted by end of year 1 of demo activities.</li> <li>• Assessment of financial instrument and management mechanism by end of year two.</li> </ul>	<ul style="list-style-type: none"> <li>• Draft report on Financial Mechanisms reviewed by Steering Group and submitted to government by 3rd quarter.</li> <li>• Formal adoption process clearly defined in Steering Group minutes and gazetted in appropriate government bulletins.</li> <li>• Assessment Report of Instrument and Co-Management process available to Independent Evaluators.</li> </ul>	<p>National Government willing to agree to independent financial instruments and revenue generation process to support co-management in this area.</p>

## WORKPLAN FOR DEMONSTRATION TWO

DEMO OUTCOME		DELIVERABLE				YEAR 1		YEAR 2	
<b>A. Management and sustainability of the southwest watershed and coast target area</b>	A.1	Establishment of demo steering committee as a cross-sectoral, participatory co-management group	X						
	A.2	Define roles and responsibilities within the Co-Management Group	X						
	A.3	Cross-sectoral training and capacity needs assessment		X	X				
	A.4	Training exercises and workshops for wardens, tour guides and other stakeholders				X	X		X
	A.5	Capacity building and training for Co-management Group				X	X		X
	A.6	Public Awareness and policy sensitisation review, strategy and implementation				X	X		X
<b>B. Assessment and mapping of watershed using field and participatory methods and existing information</b>	B.1.	Development of baseline assessment and mapping approaches and designation of field teams	X						
	B.2	Mapping and Survey Activities		X	X				
	B.3	Determine carrying capacities for commercial activities within SW region		X	X				
	B.4	Determine infrastructure requirements in relation to carrying capacities		X	X				
	B.5	Establish long-term monitoring approach within Demo area				X	X		X
<b>C. Co-management scheme strengthened through installation of requisite infrastructure</b>	C.1	Procurement and installation of supportive infrastructure related to tourism and parks management							
<b>D. Multi-level zoning and management plan supported through realignment of legislations and policy</b>	D.1	Review of policy and legislations relevant to proposed management and zoning plan		X					
	D.2	Recommendations for revisions and reforms to support co-management plans and provide for financial sustainability, based on stakeholder consultations			X	X			
	D.3	Development of regulations and guidelines based on findings for inclusion in policy and legislative review and management strategy				X	X		
	D.4	Stakeholder discussions and feedback into development and finalisation of a zoning plan related to policy and legislation reforms and realignment				X	X		
	D.5	Final Management and Zoning Plans adopted						X	X
<b>E. Financial revenues generated to support sustainability of management plan</b>	E.1	Review of potential financial and fiscal instruments for sustainability, including incentive schemes to encourage adoption of best practices and establishment of partnerships	X	X					
	E.2	Participatory consultations on fee structures and revenue collection		X	X				
	E.3	Allocation of revenue flows to prioritized components of the management plan						X	





## **Pilot Site Outcomes and Deliverables**

### **Outcome A: Participatory Management Plan established and sustainability mechanisms for the Codrington Lagoon agreed to**

- A.1. Establishment of a functional participatory co-management authority
- A.2. Identification and engagement of management and planning stakeholder groups
- A.3. Determine carrying capacities for commercial activities within the Park
- A.4. Financial needs and options assessment and identification of sustainable financing mechanism(s) through a stakeholder consultation process
- A.5. Establishment of user fees and Park Trust Fund as appropriate along with the establishment of the 'Friends of Barbuda' programme
- A.6. Preparation of a draft Management Plan (including zoning, Disaster Management section and a Sustainable Financing Mechanism) for the Park
- A.7. Stakeholder meetings to approve Management Plan prior to gazetting
- A.8. Public Awareness strategy and campaign to educate community and visitors as well as policy-makers on function of Park

### **Outcome B: Assessment and mapping of resources associated with Codrington Lagoon**

- B.1. Management Planning Resource Group identified and briefed
- B.2. Training for Resource Use Inventory and Mapping
- B.3. Baseline inventory of resources and ecosystem functions within the lagoon
- B.4. Establishment of a long-term monitoring approach within the Park

### **Outcome C: Alternative and sustainable livelihoods study developed**

- C.1. Undertake an alternative livelihoods and community incomes assessment and feasibility study
- C.2. Develop strategy for promoting economically viable and environmentally sustainable livelihoods within the Park
- C.3. Develop and promote private-public partnerships for ecotourism focusing on micro-financing schemes and development of small businesses
- C.4. Develop economic incentive schemes to ensure that sustainable practices are maintained and replicated

### **Outcome D: Park infrastructure and capacity support**

- D.1. Determine infrastructure requirements in relation to carrying capacities
- D.2. Procurement and installation of supportive infrastructure related to tourism and parks management
- D.3. Recruitment of Parks personnel (Rangers and Maintenance)
- D.4. Training exercises and workshops for Park Rangers, community wardens, tour guides and other stakeholders

## **Stakeholder Involvement and Intended Beneficiaries:**

Given the importance of Codrington Lagoon for Barbuda, all the population will benefit from management approaches that provide for the long-term sustainable use and protection of this unique system. Additionally, the following stakeholder groups have been identified for involvement in the activities developed for this project:

- Fishermen (Pot fishers, scuba divers, free divers, net fishers, lobster fishermen)
- The Barbuda Council (Barbuda Tourism Board, Fisheries Committee, Fisheries Department, Sea Wardens)
- Tourism sector (Boat operators/guides, Antigua tour operators)
- Lobster Exporters
- Hotels
- Restaurants
- Handicraft Sellers

- Fisheries Department (Antigua)

### **Long term Sustainability Strategy**

The activities associated with this project have been designed to ensure the long-term sustainability of the project, particularly through stakeholder (and general community) involvement. Stakeholder involvement throughout the life of the project is deemed crucial to its success. Furthermore, the Management Plan for the Park will have a clearly identified Sustainable Financing Mechanism evolved from an assessment of options, best practices and case studies, and through stakeholder consultations.

### **Replicability**

Lessons and Best Practices established by the Demonstration will be reviewed and captured through Outcome 4.5 of the Full Project. These activities will identify suitable areas and appropriate technologies/methodologies for replication. Lessons and Best Practices pertinent to the overall Antigua and Barbuda SIRM Plan, such as zoning modalities and monitoring strategies will also be replicated through the SIRM and associated reforms.

### **Monitoring and Evaluation Process**

Through the M&E Plan adopted by the Full Project, through regular meetings and reports of the Project Coordination Committee, and through a cross-sectoral Steering Group which will report to the Full Project Coordinator and Manager on a quarterly basis.

**Logical Framework Analysis for Demonstration Three:** Integrated Management of Codrington Lagoon and Planning the Sustainable Development of the waterfront (Barbuda) (4800 ha)

**Demonstration Objective:** To devise a management strategy to control all activities occurring within and around the Codrington Lagoon, thus ensuring that this conservation and sustainable use of biodiversity.

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
A. Management and sustainability of the Codrington Lagoon	Cross-sectoral decision-making process clearly defined and active through an established committee with evidence of full participation (including private sector, NGOs and community)	No effective cross-sectoral management mechanism or participatory process in place	<ul style="list-style-type: none"> <li>Cross-sectoral demonstration Steering Group established, including appropriate representatives from private and public sector by end of 1st quarter of demonstration project.</li> <li>Suitable management and planning stakeholder groups identified by end of 1st quarter.</li> <li>Active participation from all sectors on a biannual basis.</li> <li>Clear records of participatory decisions supporting a management strategy</li> </ul>	<ul style="list-style-type: none"> <li>Records of Steering Group meetings.</li> <li>Feedback from Steering Group members to Independent Evaluators.</li> <li>Positive stakeholder feedback on management approach (Mid and Terminal Evaluation reports)</li> </ul>	Can maintain active interest of all parties to ensure comprehensive stakeholder participation.
	Co-management authority formally established as legal entity.	No co-management authority for Codrington Lagoon formally established.	<ul style="list-style-type: none"> <li>Feasibility for establishment of formal co-management body for Codrington Lagoon assessed by end of 2nd quarter of demonstration project.</li> <li>Co-management authority is a legal entity by end of 1st year of demonstration project.</li> </ul>	<ul style="list-style-type: none"> <li>Feasibility assessment available to Project and documented in minutes of Steering Group confirmed by Evaluation Process (MTE &amp; TE).</li> <li>Legal status of co-management authority gazetted by Government, confirmed by Evaluation Process (TE).</li> </ul>	The feasibility study finds that it will be possible to establish legal entity, and Government willing to formally recognise co-management authority.
	Carrying capacity for commercial activities in Codrington Lagoon assessed and infrastructure requirements for parks	Carrying capacity for commercial activities within Codrington Lagoon currently unknown.	<ul style="list-style-type: none"> <li>Carrying capacity of Codrington Lagoon assessed during the 1st year of the Project.</li> <li>Necessary infrastructure to support commercial tourism activities in park identified.</li> </ul>	Report on carrying capacity study and identification of infrastructural requirements for tourism and parks management,	Technical capability to adequately assess carrying capacity of Codrington Lagoon.

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	management identified.			confirmed by Independent Evaluator (MTE & TE).	
Realistic and effective financial instrument in place to support long-term sustainable and participatory co-management of Codrington Lagoon.	No fees structures currently in place or under consideration. Limited information on the suitability of financial instruments.	<ul style="list-style-type: none"> <li>Financial needs and options assessments completed and recommendations completed by end of 2nd quarter.</li> <li>Stakeholders all fully aware and consulted on proposed fee structure and revenue generation mechanism from outset (see below).</li> <li>Sustainable financial instrument "Park Trust Fund" and "Friends of Barbuda" formally adopted by end of year 1 of demo activities.</li> <li>"Park Trust Fund" and "Friends of Barbuda" operational by end of 2nd year of demonstration project.</li> </ul>	<ul style="list-style-type: none"> <li>Draft report on financial needs and options submitted to government by 3rd quarter and available from PCU.</li> <li>Formal adoption process clearly defined in Steering Group minutes and gazetted in appropriate government bulletins.</li> <li>Assessment Report of Instrument and co-management process available to Independent Evaluators.</li> </ul>	National Government willing to agree to independent financial instruments and revenue generation process to support co-management in this area.	
Codrington Lagoon zoning and management plan, including Disaster Management Plan, prepared in full consultation with local stakeholders, and available to Project for inclusion in national SIRM zoning and management plan (Output 2.1).	Draft Zoning Plan but no management plan, or disaster management plan, for Codrington Lagoon.	<ul style="list-style-type: none"> <li>Draft zoning and management plan for Codrington Lagoon prepared by end of 1st year of demonstration project.</li> <li>Full stakeholder participation in preparation and finalisation of zoning and management plan (see below).</li> <li>Final zoning and management plan including disaster management plan, regulations and activities guidelines completed.</li> <li>Adopted by co-management authority and submitted to Government for gazetting by middle of 2nd year.</li> </ul>	<ul style="list-style-type: none"> <li>Zoning and Management Plan available to Project for inclusion in SIRM Zoning Plan.</li> <li>Adopted by Project Coordination Committee and gazetted in appropriate government bulletins.</li> <li>Confirmed by Independent Evaluator (MTE).</li> </ul>	No objectives from Project Coordination Committee or individual sectors on Codrington Lagoon zoning plan. Government willing to gazette Codrington Lagoon.	

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	<p>Widespread and comprehensive awareness and understanding of both the co-management process, the funding mechanism, and zoning process, and the function of the park amongst all stakeholders within the demo system boundary, and for visitors. Full participation of all stakeholders in the consultation and adoption process for the co-management authority, funding mechanism and zoning process.</p>	<p>Little to no stakeholder consultation on the establishment of Codrington Lagoon. Limited discussions to date on development of a financial instrument to support such a strategy or on zoning or management plans.</p>	<ul style="list-style-type: none"> <li>Widespread media input to generate awareness of demonstration activities.</li> <li>Stakeholder meetings capturing fully participatory stakeholder input on least 3 occasions (beginning, middle and end).</li> <li>Stakeholder meetings (can be integrated with above for cost-effectiveness) for establishing co-management authority, developing financial mechanism, and drafting and finalisation of the zoning and management plan.</li> <li>Stakeholders from all sectors aware of the process and opportunities to express opinions.</li> <li>Awareness raising material (leaflets, Government website, newspaper articles and media reports) on prepared and distributed by end of 1st year of demonstration project.</li> <li>Clear understanding and support for Codrington Lagoon project within all stakeholders and visitors to Park.</li> </ul>	<ul style="list-style-type: none"> <li>Stakeholders from all sectors aware of consultation process, confirmed through minutes of stakeholder meetings and minutes of Steering Group.</li> <li>Newspaper articles / media reports to raise awareness of stakeholders of consultation process confirmed by MTE.</li> <li>Receipts of expenditure on at least 3 stakeholder meetings.</li> <li>Comprehensive evidence of awareness raising through materials and through stakeholder feedback.</li> </ul>	<p>Local communities willing to participate in consultation process ('consultation fatigue'). Private sector willing to be interviewed. Government willing to accept full participatory process of all stakeholders</p>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
<p><b>B. Assessment and mapping of resources</b></p>	<p>Codrington Lagoon surveyed and mapped, and survey data, maps and reports input into EIMS. Lessons and best practice available to Project for national baseline assessment.</p>	<p>No standard survey methods or approaches to mapping watersheds. No recent comprehensive surveys or mapping of Codrington Lagoon.</p>	<ul style="list-style-type: none"> <li>Remote sensing data acquired and available to Project at end of 1st quarter of demonstration project.</li> <li>Draft survey methods manual available for review by Steering Group by end of 1st quarter.</li> <li>Survey data, methods, reports and mapping of Codrington Lagoon completed by end of 1st year of demonstration project.</li> <li>Maps to include the following: vegetation types (including coastal vegetation), coral reefs and other benthic habitats, soil types, topography, location of streamways, aquifers and water storage facilities, villages, roads, infrastructure, population density, terrestrial, coastal and marine resource use (fishing grounds, dive sites etc.), private and public land, location of survey sites etc.</li> <li>Survey data, methods, reports and maps input into EIMS by end of 1st year of demonstration project, and available as lessons and best practice for national baseline assessments.</li> </ul>	<ul style="list-style-type: none"> <li>Draft survey methods manual available to Project.</li> <li>Sampling strategy available to Project.</li> <li>Final survey methods manual and survey data, reports and maps input into EIMS and available to Project.</li> <li>Receipts of expenditure on survey equipment.</li> <li>Documentation confirmed by Independent Evaluator (MTE &amp; TE).</li> </ul>	<p>Remotely sensed images at an appropriate resolution are available. Available technical expertise to process image. Sufficient capacity to undertake surveys, methods and sampling strategy appropriate (adequate number of sites etc). No logistical problems encountered in completing surveys (e.g. problems with land access).</p>

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	<p>Long term monitoring programme (environmental and socio-economic) and reporting system established, with data being regularly input into EIMS.</p>	<p>No long term monitoring programme established in Codrington Lagoon</p>	<ul style="list-style-type: none"> <li>• Long term monitoring and reporting for environmental and socio-economic indicators established by end of 1st year of demonstration project.</li> <li>• Raw data and monitoring reports available through EIMS</li> <li>• Monitoring surveys carried out at 6 month intervals during 2nd year.</li> <li>• Lessons and best practice captured and available to main Project.</li> <li>• Improvements detected in long term environmental and socio-economic monitoring data end of 2nd year of project.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring programme for environmental and socio-economic surveys established, data collected and analysed biannually and monitoring report prepared.</li> <li>• Monitoring data and reports entered into EIMS.</li> <li>• Monitoring surveys showing positive impacts of the demonstration project.</li> <li>• Receipts of expenditure on survey equipment.</li> <li>• Documentation and improvements in environmental and socio-economic conditions confirmed by Independent Evaluator (MTE &amp; TE).</li> </ul>	<p>Possible to establish and permanently mark monitoring sites. Monitoring sites not damaged / vandalised / built on. EIMS operational and ready to accept data input.</p>
<p><b>C. Alternative and sustainable livelihoods study</b></p>	<p>Strategy to develop sustainable alternative livelihoods within Park.</p>	<p>No assessment of alternative livelihoods or strategy to promote alternative livelihoods in area.</p>	<ul style="list-style-type: none"> <li>• Assessment and feasibility study on alternative livelihoods and community incomes completed in 2nd quarter of 1st year of demonstration project.</li> <li>• Strategy for promoting economically viable sustainable alternative livelihoods prepared during 2nd and 3rd quarter of 1st year of demonstration project.</li> <li>• Stakeholders aware and encouraged to attempt these alternative livelihood options during 2nd year of project.</li> <li>• At least 10 people express interest in changing jobs, and at least 5 jobs created through Project.</li> </ul>	<ul style="list-style-type: none"> <li>• Report on alternative livelihoods assessment and feasibility study available to Project.</li> <li>• Strategy for alternative livelihoods made available to Project.</li> <li>• Receipts of expenditure on 1 stakeholder work and records of attendance.</li> <li>• Positive feedback from stakeholders on alternative livelihoods</li> </ul>	<p>Realistic and appropriate alternative livelihoods identified. Sufficient interest by stakeholders in changing livelihoods.</p>



OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
				<p>proposed through Project.</p> <ul style="list-style-type: none"> <li>Positive impacts recorded through socio-economic monitoring programme.</li> <li>Evidence / records of number of people expressing an interest in the sustainable livelihood options, and number of people that successfully capitalised on the opportunities on offer.</li> </ul>	
	Public private partnerships for eco-tourism ventures in Codrington Lagoon established.	No public private partnerships for eco-tourism established in area.	<ul style="list-style-type: none"> <li>Potential Public Private Partnerships identified by end of 2nd quarter of 1st year.</li> <li>At least 2 Public Private Partnerships established demonstrating micro-financing for small businesses</li> </ul>	<ul style="list-style-type: none"> <li>2 Public Private Partnerships established.</li> <li>Meetings with potential private partners recorded.</li> <li>Steering Group minutes.</li> <li>Confirmed by Independent Evaluator.</li> </ul>	Suitable Public Private Partnerships can be identified.
<b>D. Park infrastructure and capacity support</b>	Necessary infrastructure for parks management procured and deployed.	No infrastructure to support park management currently deployed	<ul style="list-style-type: none"> <li>Necessary infrastructure identified through carrying capacity study procured and deployed during 2nd year of demonstration project.</li> </ul>	<ul style="list-style-type: none"> <li>Receipts of expenditure on infrastructure, and evidence of its deployment</li> <li>Confirmed by Independent Evaluator.</li> </ul>	Sufficient funding to acquire necessary infrastructure through project.

OUTCOME	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	<p>Cross-sectoral training programme implemented (including wardens, tour guides and park managers and other stakeholders) and based upon needs assessment.</p>	<p>No cross-sectoral training programme established in Codrington Lagoon</p>	<ul style="list-style-type: none"> <li>• Park staff recruited by end of 1st year.</li> <li>• Capacity needs assessment of all Park Staff (Wardens, Park Rangers, Managers, Tour Guides) and other stakeholders (NGOs, local community) completed by end of 1st year.</li> <li>• Training materials and workplan developed.</li> <li>• Training programme implemented including 3 training exercises and 3 workshops.</li> <li>• Training materials input into EIMS and made available to national Project.</li> <li>• Park staff trained and able to undertake required duties.</li> <li>• Other stakeholders trained and with a greater ability to participate in activities</li> </ul>	<ul style="list-style-type: none"> <li>• Evidence of staff recruitment process.</li> <li>• Records of the people assessed and the training and capacity needs identified.</li> <li>• Training programme workplan and training materials developed through the Project available for use at national level.</li> <li>• Records of attendance of training programme.</li> <li>• Confirmed by Independent Evaluator.</li> </ul>	<p>Possible to identify suitable staff. Training programme developed is of interest to stakeholders and stakeholders willing to participate. Possible to schedule cross-sectoral training at a time that is appropriate for all interested parties (e.g. local communities may prefer evenings, whereas government agencies may prefer daytime schedule).</p>

**WORKPLAN FOR DEMONSTRATION THREE**

DEMO OUTCOME	DELIVERABLE	YEAR 1		YEAR 2		
A. Participatory Management Plan established and sustainability mechanisms for Codrington Lagoon agreed to	A.1	Establishment of a functional participatory co-management authority	X			
	A.2	Identification and engagement of management and planning stakeholder groups	X			
	A.3	Determine carrying capacities for commercial activities within the Park	X	X		
	A.4	Financial needs and options assessment	X	X		
	A.5	Establishment of user fees and Park Trust Fund as appropriate along with the establishment of the 'Friends of Barbuda' programme			X	
	A.6	Preparation of a draft Management Plan (including a Disaster Management section) for the Park			X	X
	A.7	Stakeholder meetings to approve Management Plan prior to gazetting				X
	A.8	Public Awareness strategy and campaign to educate community and visitors as well as policy-makers on function of Park			X	X
B. Assessment and mapping of resources	B.1	Management Planning Resource Group identified	X			
	B.2	Baseline inventory of resources and ecosystem functions within the lagoon		X		
	B.3	Training for Resource Use Inventory and Mapping			X	
	B.4	Establishment of a long-term monitoring approach within the Park				X
C. Alternative and sustainable livelihoods study	C.1	Undertake an alternative livelihoods and community incomes assessment and feasibility study	X			
	C.2	Develop strategy for promoting economically viable and environmentally sustainable livelihoods within the Park		X		
	C.3	Develop and promote private-public partnerships for ecotourism focusing on micro-financing schemes and development of small businesses			X	X
	C.4.	Develop economic incentive schemes to ensure that sustainable practices are maintained and replicated			X	
D. Park infrastructure and capacity support	D.1	Determine infrastructure requirements in relation to carrying capacities		X		
	D.2	Procurement and installation of supportive infrastructure related to tourism and parks management		X		X
	D.3	Recruitment of Parks personnel (Rangers and Maintenance)			X	
	D.4	Training exercises and workshops for Park Rangers, community wardens, tour guides and other stakeholders				X

<b>Demonstration:</b>	Four
<b>Project Title:</b>	Promoting best practices in waste water disposal water conservation and re-use in the North West tourism zone Antigua
<b>Integrated Issues:</b>	Water quality and quantity; Sustainable resource use; Agriculture; Tourism
<b>Objective:</b>	To identify and promote best practice in waste water disposal and water conservation and re-use in the NW tourism zone in Antigua.
<b>Executing Agency</b>	Environment Division of Ministry of Works, Transportation and Environment
<b>Time Frame</b>	2 years +
<b>Cost of Project</b>	<b>GEF:</b> \$264,130 <b>Co-funding:</b> \$307,350

### ***Background and Justification***

Tourism can play an important role in the development of a small island's domestic economy. If the development of tourism is planned carefully (including hotel construction, imported goods and foods, preservation of culture and island heritage, protection of the island's environment) and effectively regulated, then the tourism sector can be a positive influence for small islands. However, the economic potential that accompanies tourism (large chain hotels, international airlines, cruise ship lines, travel agents) often overrides any environmental concerns or the rate of development exceeds the capacity of the island to regulate. The need for economic development is then often accompanied by environmental costs (pollution, land degradation, beach erosion, biodiversity loss, loss of cultural ways of life) that ultimately degrade the key attributes that attracted the sector in the first place.

Tourism has been the main focus of economic development on Antigua and Barbuda since the 1960s and it is now responsible for about 70% of the GDP. The numerous white sand beaches have served as the key attribute that attracted developers to the islands, hence the reason why the much of the tourism is coastal. The current level of tourism and lack of institutional capacity to regulate the existing establishments or control new developments is putting pressure on the islands' limited resources and leading to conflicts of interest. In the meantime the heavy economic dependence on tourism leaves the island vulnerable to market fluctuations and recessions. Antigua and Barbuda would like to diversify the economy away from its reliance on beach tourism and the tourism sector generally, as do other Caribbean nations. In the meantime, however, there is a need to minimise the impacts of this sector on the environment and thereby preserve the quality of the tourism product the island has to offer.

Freshwater is a scarce resource in Antigua and Barbuda. In the context of a growing tourist industry, demand for water is rising. All water resources of Antigua and Barbuda are currently vested in the Antigua Public Utilities Authority (APUA). APUA operates a network of distribution pipes throughout the country to supply treated water to both domestic and commercial sectors. Agriculture is considered to be a commercial activity and irrigation generally does not enjoy any special preference in water allocation. This prevents the expansion of this sector, through limiting the ability to maintain a continuous supply, and hence the potential profitability. Moreover, this situation is unlikely to change as the APUA long-term water development plan places emphasis on desalination of seawater to eliminate the risk of drought and inadequate surface storage and groundwater facilities.

At present there are two municipal desalination plants located at Crabbs Peninsular on the North East coast of Antigua, one government-owned and the other privately owned. The cost of water is currently being subsidized by the APUA and this is not a sustainable situation. All revenues generated are targeted for Operation and Maintenance, and there is little left over for maintaining the watersheds. A number of hotels have recently installed private desalination units, as the water produced from these private units is not subject to the same commercial water rates. This has significantly reduced the revenue to the APUA. So aside from the environmental problems that can be caused by desalination plants (warm brine effluent and use of acid as a cleaning product), the increasing number of private desalination units is inadvertently constraining the ability of government agencies to address the environmental concerns and find long term sustainable solutions to water shortage issues affecting other sectors (i.e. agriculture).

The North West Coast of Antigua is the main tourism zone on the island, with the greatest concentration of hotels and the highest levels of water use. This area is however within the Cedar Grove Watershed (W1)

which is a drought risk zone with the lowest annual rainfall compared to other watersheds and limited ground water stores. There are no municipal sewage treatment plants and although some exist in private hotels, most domestic properties utilize septic tank systems to provide primary treatment of sewage. In the absence of proper building regulations many of these tanks are not properly constructed or maintained and this can lead to contamination of streams or groundwater (through overflow or runoff) especially during heavy storms. The NW tourism area has been identified as an environmental Hotspot due to the high levels of liquid and waste contamination (nutrients, microbiological and chemical pollution; suspended solids; solid wastes).

The purpose of this demonstration project is to develop mechanisms and strategies by which to encourage better water conservation and re-use, to minimise both point and non-point sources of pollution (from poorly maintained septic tanks and private waste water disposal systems), and ensure equitable distribution of water resources. Assistance will be given to APUA to review the water tariff scheme and to find alternative mechanisms by which to address: 1. Inadequate waste water disposal, 2. lost revenues from water provided by private desalination plants, 3. Ensuring the equitable and continuous supply of irrigation water for agriculture, and 4. Environmental management responsibilities in the watershed. In doing so the project will work closely with the Hotels and Tourism Association and will promote public private partnerships and encourage the adoption of environmental management systems. Strategies to compensate for the use of private desalination plants could be in the form of implementing an offsetting scheme by which the excess grey-water produced by hotel is made available for re-use for municipal and / or agricultural purposes. The project will investigate the possibility of implementing a Blue Flag eco-certification scheme for the beaches within the NW zone. The project will collaborate with the GEF-IWCAM project activities concerning water quality and monitoring activities in the GEF-IWCAM project. The **objective** of the project is to identify and promote best practice in waste water disposal and water conservation and re-use in the NW tourism zone in Antigua.

### **Pilot Site Objectives and Deliverables**

#### **Outcome A: Establishment of management structure for self-regulation of tourism industry**

- A.1. Conduct an assessment of tourism establishments in NW region to identify suitable targets for EMS implementation
- A.2. Undertake detailed evaluation of selected establishments and develop an implementation plan
- A.3. Establishment of cross-sectoral management group to coordinate Demonstration Activities through regular steering meetings
- A.4. Undertake community policy and self-regulation development workshops
- A.5. Assist in establishment of self-regulatory environmentally-friendly tourism body among tourist establishments (from core of steering group)

#### **Outcome B: Development of a Policy and Financial Framework in support of EMS**

- B.1. Undertake a gaps-analysis in policy and regulations relating to environmental standards within the tourism industry in the northwest region
- B.2. Review guidelines and standards for EIA, SEA, environmental quality, etc
- B.3. Review of current water supply tariffs and identify mechanisms for generation of revenues for watershed and water resource management, including review of policies for equitable use between different demand sectors
- B.4. Review and recommend financial and fiscal incentives and fee structures, as appropriate
- B.5. Development of economic incentive schemes to encourage adoption of sustainable practices and options
- B.6. Case study report for distribution to other establishments (including Cost-Benefit identification)
- B.7. Develop and present to stakeholders and Government a suite of concrete recommendations for reforms to the policy framework and for development of financial and fiscal mechanisms

#### **Outcome C: Identification of technologies for water resource conservation and recycling**

- C.1. Review options and case studies, and optional improvement strategies for domestic liquid

waste disposal (sewage and grey water), of mechanisms, strategies and technologies for water conservation and recycling

**Outcome D: Key stakeholder groups in the project area are supportive of the EMS, and replication strategies are in place**

- D.1. Conduct awareness seminars for tourism industry
- D.2. Undertake a training exercise and provide technical support and monitoring for adoption of EMS procedures at selected establishments
- D.3. Conduct awareness seminars and capacity training courses to present case study findings and recommendations to other establishments
- D.4. Establish a National Award Scheme to provide incentive and promote champion establishments, linked to existing regional and international schemes, as appropriate
- D.5. Provide recommendations to cross-sectoral management group for action
- D.6. Undertake awareness briefings and seminars for tourism establishments to explain incentives and cost-benefits of various improvement and recycling schemes

**End of Project Landscape (Outcomes)**

Working examples of Environmental Management Systems within selected operators/hotels and lessons/best practices available for transfer and replication. Specialists trained to provide guidance and training to tourism operators and hotels on implementing cost-effective EMS. Active examples of water recycling and re-use and appropriate wastewater treatment technologies and strategies. Mechanisms established for sustainable generation of funding and revenues to support watershed and water resource management and wastewater treatment. National award schemes in place for Green Flag hotels and Best Operators.

**Stakeholders and Beneficiaries**

Primarily the tourism industry which will benefit from effective water resource and wastewater management and improved coastal water quality, and the agricultural sector which will benefit from increased water access. Ecosystem functions within the area will be better protected as a result of reduced pollutants and more effective use of resources

**Long term Sustainability Strategy**

This will be developed through a carefully review of revenue options and economic instruments including a 'beneficiary-pays' and 'polluter-pays' approach. Fee structures and incentive schemes will be identified through deliverables in Objective C.

**Replicability**

Lessons and Best Practices established by the Demonstration will be reviewed and captured through Outcome 4.5 of the Full Project. These activities will identify suitable areas and appropriate technologies/methodologies for replication. Lessons and Best Practices pertinent to the overall Antigua and Barbuda SIRM Plan will also be replicated through the SIRM and associated reforms.

**Monitoring and Evaluation Process**

Through the M&E Plan adopted by the Full Project, through regular meetings and reports of the Project Coordination Committee, and through a cross-sectoral Steering Group which will report to the Full Project Coordinator and Manager on a quarterly basis.

**Logical Framework Analysis for Demonstration Four: Promoting best practices in waste water disposal water conservation and re-use in the North West tourism zone Antigua (809 ha)**  
**Demonstration Objective:** To identify and promote best practice in waste water disposal, water conservation and re-use in the NW tourism zone in Antigua.

DEMO SUB OBJECTIVE	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
A. Establishment of management structure for self-regulation of tourism industry	Cross-sectoral decision-making process clearly defined and active through an established committee with evidence of full participation of stakeholders (including private sector, NGOs and community)	No effective cross-sectoral management mechanism or participatory process in place	<ul style="list-style-type: none"> <li>Cross-sectoral demonstration Steering Group established including appropriate representatives from private and public sector by end of 1st quarter of demonstration project.</li> <li>Active participation from all sectors on a biannual basis.</li> <li>Clear records of participatory decisions supporting an integrated and sustainable management strategy throughout project</li> </ul>	<ul style="list-style-type: none"> <li>Records of Steering Group meetings.</li> <li>Feedback from Steering Group members to Independent Evaluators.</li> <li>Positive stakeholder feedback on management approach (Mid and Terminal Evaluation reports)</li> </ul>	Can maintain active interest of all parties to ensure comprehensive stakeholder participation.
	Relevant national guidelines, standards and codes of conduct developed in participation with tourism stakeholders, and adopted by Steering Group	Existing policy and regulatory frameworks do not encourage self-regulation by sectors	<ul style="list-style-type: none"> <li>Review of existing policies and legislation relating to self-regulation, EIA, SIA procedures and environmental quality standards within 6 months of demo project.</li> <li>Recommendations on necessary realignment of policy and legislations to support a self regulatory approach completed within first 6 months of Demo Project with wide stakeholder participation</li> <li>Final national guidelines and codes of conduct agreed and adopted by Steering Group and presented to Cabinet by end Y2</li> </ul>	<ul style="list-style-type: none"> <li>Minutes of Project Board &amp; NCM as per minutes.</li> <li>Guidelines available.</li> </ul>	Government prepared to accept that review process is intended to realign policy and legislation related to national environmental standards and codes of conduct in the tourism sector in line with SIRM approach. Effective cooperation from relevant agencies and departments

DEMO SUB OBJECTIVE	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	Self-regulatory body to oversee environmental adherence and good codes of conduct in tourism sector established in NW region, with possibility of extending scheme nationwide.	No self regulatory body established in NW tourism region	<ul style="list-style-type: none"> <li>Awareness raising activities to ensure all tourism stakeholders in NW region are informed of the upcoming events.</li> <li>At least 3 seminars held for tourism industry (beginning, middle and end) on procedures involved in self-regulation.</li> </ul>	<ul style="list-style-type: none"> <li>Newspaper and media articles</li> </ul>	Tourism sector interested in establishing a self regulatory body. Able to attend seminars and workshops.
<b>B. Adoption of Environmental Management Systems and incentives by tourism industry</b>	Environmental management systems and voluntary eco-certification and labelling schemes established in hotels in NW region.	Limited use of EMS in tourism establishments in NW tourism zone.	<ul style="list-style-type: none"> <li>Training and technical support provided for the adoption and implementation of EMS procedures at selected establishments during Y2 result in broader sectoral acceptance of benefits of EMS approaches</li> <li>Case study reports for distribution to other establishments, including cost benefit analysis showing economic and technical benefits from improved management and the more effective use of equipment input into EIMS during Y3, and available to national project as lessons and best practice.</li> <li>Raised awareness of all stakeholders through seminars to present case study findings during 2<sup>nd</sup> quarter of Y3</li> </ul>	<ul style="list-style-type: none"> <li>Detailed assessments documented, cost benefit analyses and case study reports documented and input in EIMS.</li> <li>Evidence and documentation confirmed by Independent Evaluators</li> </ul>	<p>Possible to identify 3 to 5 suitable tourism establishments willing to participate in project.</p> <p>No change in management of establishments or commitment to participate in demonstration activities. Possible to demonstrate significant cost benefits of implementing EMS.</p> <p>Sufficient capacity within the project to assess and implement EMS.</p>
	% of hotels in the NW area that comply with self-regulatory guidelines and apply EMS approaches Improved water quality in bathing waters of NW region	0% No baseline information	<ul style="list-style-type: none"> <li>At least 3 hotels apply EMS and can demonstrate improvements in environmental standards and conduct, and cost benefits by end of project.</li> <li>Improved disposal of wastewater and significant improvement in quality of bathing waters (reduction in faecal</li> </ul>	<ul style="list-style-type: none"> <li>Internal project monitoring</li> <li>Internal project monitoring</li> </ul>	



DEMO SUB OBJECTIVE	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
	Capacity of national agencies strengthened and familiar with EMS assessment process and able to participate.	National agencies currently have limited ability to assess EMS.	coliforms). <ul style="list-style-type: none"> <li>Needs assessment of EMS training requirements carried out in first 6 months of demo project.</li> <li>Cross-sectoral training programme implemented alongside training seminars for tourism stakeholders in hotels (for cost effectiveness).</li> <li>Specific training in assessment procedures and certification of key staff member provided according to needs assessment.</li> <li>Progress reports and certification schemes by relevant training institutions.</li> </ul>	<ul style="list-style-type: none"> <li>Documented evidence of training needs assessments.</li> <li>Workplan for cross-sectoral training programme and records of attendance of key representatives of relevant agencies to training seminar.</li> <li>Evidence of attendance and certification of key staff in agencies who attended international training institutions.</li> <li>Confirmed by Independent Evaluator.</li> </ul>	Possible to build sufficient institutional capacity to be able to undertake EMS assessments. Human resource limitations.
	National award scheme established for coastal tourism. Annual award scheme established, with progressively more stringent criteria relating to EMS	No national award scheme to champion good environmental practice	<ul style="list-style-type: none"> <li>National award scheme established in the first year of demo project.</li> <li>At least 3 entrants in the first year, with growth continuing in next year.</li> <li>Widespread awareness raising and sensitisation of general public of awards scheme (leaflets, posters, media articles, Government website etc) to raise awareness of scheme.</li> <li>Environmental champions identified and awarded by 3<sup>rd</sup> quarter of Y3</li> <li>By end of project 30% of tourism sector enter, showing tangible increase in EMS activity.</li> </ul>	<ul style="list-style-type: none"> <li>Direct reporting of awards program.</li> <li>Evidence of widespread awareness raising (leaflets, posters, media articles, Government website etc).</li> <li>Confirmed by evaluation process.</li> </ul>	Award scheme achieves a credible level of recognition within the tourism sector.

DEMO SUB OBJECTIVE	INDICATOR	BASELINE	TARGET	SOURCE OF VERIFICATION	RISKS AND ASSUMPTIONS
<p><b>C. Financial and economic instruments for regulation of wastewater disposal, water resource conservation and watershed management</b></p>	<p>Strategy to improve regulation of wastewater disposal, improved and to generate revenues for monitoring and management of watershed, for inclusion in national 5 year SIRM strategy.</p>	<p>No strategic recommendations for improving the regulation of wastewater disposal, generating revenues for watershed management.</p>	<ul style="list-style-type: none"> <li>Review of strategies and technologies for (i) water conservation and recycling, and (ii) domestic and commercial liquid waste disposal, and (iii) policies and legislation from examples from SIDS elsewhere in region and worldwide, that would be applicable to Antigua &amp; Barbuda.</li> <li>Recommendations to improve above issues (i-iii), and ensure equitable use between demand sectors completed and provided to Steering Group within 1Y of demo project.</li> <li>A financial needs and options assessment, including cost benefit analysis, for promoting water conservation and grey water re-use schemes, and generating revenues for watershed and water resource management completed with 2nd quarter of 1st year of demo project, and recommendations made available to Project Coordination Committee in 3rd quarter of demo project.</li> <li>Development of a comprehensive integrated strategy for water conservation and waste disposal and watershed management, for inclusion in SIRM presented to and adopted by cross-sectoral management group and presented to Project Coordination Committee by end of 2nd year of demo project.</li> </ul>	<ul style="list-style-type: none"> <li>Documented evidence of reviews and recommendations, and financial needs assessment and option recorded in reports and Steering Group minutes.</li> <li>Strategy provided to Steering Group and Project Coordination Committee documented in minutes of meetings.</li> <li>Confirmed by Independent Evaluator.</li> </ul>	<p>Suitable alternative wastewater disposal and water conservation schemes can be identified that would be applicable in local situation. Government willing to accept that revenue generation scheme for watershed management.</p>

## WORKPLAN FOR DEMONSTRATION FOUR

DEMO OBJECTIVE	DELIVERABLE	YEAR 2		YEAR 3	
A. Establishment of management structure for self-regulation of tourism industry	A.1 Conduct an assessment of tourism establishments in NW region to identify suitable targets for EMS implementation	X			
	A.2 Undertake detailed assessments of selected establishments and develop an implementation plan		X		
	A.3 Establishment of cross-sectoral management group to coordinate Demonstration Activities through regular steering meetings	X			
	A.4 Undertake community policy and self-regulation development workshops	X	X		
	A.5 Assist in establishment of self-regulatory environmentally-friendly tourism body among tourist establishments (from core of steering group)		X	X	
B. Development of a Policy and Financial Framework in support of EMS	B.1 Undertake a gaps-analysis in policy and regulations relating to environmental standards within the tourism in the northwest region	X	X		
	B.2 Review guidelines and standards for EIA, SEA, environmental quality, etc	X	X		
	B.3 Review of current water supply tariffs and identify mechanisms for generation of revenues for watershed and water resource management		X		
	B.4 Review existing and optional improvement strategies for domestic liquid waste disposal (sewage and grey water) including financial incentives and fee structures as appropriate		X	X	
	B.5 Undertake awareness briefings and seminars for tourism establishments to explain incentives and cost-benefits of various improvement and recycling schemes				X
	B.6 Case study report for distribution to other establishments (including Cost-Benefit identification)				X
	B.7 Develop and present to stakeholder and Government a suite of concrete recommendations for reforms to the policy framework and for development of financial and fiscal mechanisms				X
C. Outcome C: Identification of technologies for water resource conservation and recycling	C.1 Review options and case studies of mechanisms, strategies and technologies for water conservation and recycling, and policies for equitable use between different demand sectors		X		
D. Key stakeholder groups in the project area are supportive of the EMS, and replication strategies are in place	D1 Conduct awareness seminars for tourism industry	X	X		
	D.2 Undertake a training exercise and provide technical support and monitoring for adoption of EMS procedures at selected establishments		X	X	
	D.3 Conduct awareness seminars and capacity training courses to present case study findings and recommendations to other establishments				X
	D.4 Establish a National Award Scheme to provide incentive and promote champion establishments				X
	D.5 Provide recommendations to cross-sectoral management group for action				X
	D.6 Undertake awareness briefings and seminars for tourism establishments to explain incentives and cost-benefits of various improvement and recycling schemes				X