



Towards Ocean and Coastal Zone Management in Jamaica

**Proposed Action Plan
(First Five Years)**

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EXECUTIVE SUMMARY

The proposed National Action Plan on ocean and coastal zone management is a product of national policy to elevate concern for coastal management to the level of planning and action. It recognizes coastal resources as important assets that offer the country manifold economic options.

The Action Plan is intended to be consistent with the general direction of the policy on ocean and coastal zone management so that both documents will harmonize in respect of matters relating to the use of coastal resources.

The plan is made up of projects that are clustered under program areas and spread over a period of one five-year cycle in two phases. Phase I spreads over the years zero to two and comprises of eight program areas, whereas Phase II spreads over years three to five and comprises four program areas. Within each project the objective, activities (actions), scope, timing/duration, overall and secondary responsibility, and performance indicators have been identified. Many of the actions identified will require new and additional financial resources and technical support, both from external sources and from local inputs. The majority of the actions are project-oriented, but some are non-project in nature.

Annex/Appendix I include the project proposal for a Center of Excellence that has been identified as one of the projects of the Plan as well as, a list of references (background information).

It is envisaged that implementation of the Action Plan will make coastal management a dynamic process which will evolve over time, through the promotion of the values of coastal patrimony of the country and the involvement of the people. Through the principle of integration of sectors in coastal management, planning will become part of the administrative machinery.

The following summarizes the program areas comprising the Action Plan:

Phase I: Foundation Programs

Phase 1 stresses priority interventions that are essential in laying the foundation for sustainable coastal planning and integrated management in Jamaica. Hence, it focuses on filling critical gaps in existing activities, initiating capacity building, and raising awareness. This phase includes the following program areas:

Program Area 1: Strengthening the Role of the Council

The Council oversees the activities for the management of the ocean and coastal resources. Its main role is to coordinate the activities that support the management of the coastal zone.

In its present form, the Council functions as a multi-disciplinary and an inter-agency advisory body on matters relating to ocean and coastal zone management. However, the Council itself does not have power to implement policy and/or strategies for the management of the coastal zone. The final decision to implement and/or manage a particular issue that develops at the Council, rests with the line ministry. In light of this, it becomes apparent that a new Implementing Agency is required.

This program area will see the finalization of the decision by the Council to formulate an Implementing Agency. This program area will be given a top priority as the successful implementation of the policy depends on the outcome of this program area.

Program Area 2: Program Preparation, Project Identification and Mobilization of Financial and Technical Resources

The present level of Jamaica's human and financial resources makes it necessary to seek additional financial and technical resources to develop capacity necessary to implement the policy and the action plan. The achievement of this target will require the mobilization of considerable financial and technical resources. This program is therefore very critical for the implementation of the entire plan and will be given absolute priority in the early stages of this phase. The program will seek different sources of funding for the activities making up the Action Plan and establish mechanisms for financing the integrated coastal zone management in the long run.

Program Area 3: Consolidation of Legal, Administrative and Enforcement Framework

The legislation relating to integrated coastal zone management is fragmented, incomplete in coverage, and inadequate in so far as the integration of various sectors is concerned. The policy and legal foundations are basic to the development of other initiatives, and therefore, would require priority attention.

The program includes actions that involve the comprehensive review and reconciliation of national legislation, policy and programs that affect the coastal zone with a view to making them compatible with national needs and concerns relating to integrated coastal zone management. It will also address protection and compensation of local knowledge on coastal management.

Program Area 4: Human Resources and Institutional Capacity Building

Jamaica's public and private sectors and NGOs experience a shortage of expertise in areas related to integrated coastal zone management. Institutional capacity is weak throughout the sectors that will eventually be involved in the integrated management of the coastal zone. Together, these two realities combine to present a serious obstacle to the achievement of the national goals relating to the management of the coastal zone.

The program will address these weaknesses by developing human resources and institutional capacity for the management of the coastal zone. Capacity will be focused at the central level and will be complemented by a program of public awareness and education. A more fundamental purpose of the activities under this program is to help ensure that there is capacity for the implementation of the Action Plan.

Program Area 5: Research and Information Related on Coastal Management Issues

Lack of local expertise and weak institutional and financial capacity has contributed to an inadequate level of research being undertaken locally. Also, the identification of areas for research has not been conducted in any systematic way, so that many of the national priorities related to coastal zone management are still not addressed. This weakness in research achievement has contributed to a low level of information on most of the issues related to integrated coastal zone management. Research and information are integral to planning, management, identification and monitoring, and are identified as a priority area for action. This program area will set priorities for coastal research, indicators for monitoring, and identify mechanisms for the collection, analysis and dissemination of information.

Program Area 6: Public Awareness and Education

Levels of public awareness in Jamaica relating to integrated coastal zone management, needs to be further enhanced in order to realize the importance of sustainability of the coastal environment. Increased public awareness is needed, not only for the wider understanding of integrated coastal zone management, but also for reducing threats to it, and for human resource development.

The program will support activities leading to the preparation of instructional material, formal and informal training of citizens, and the training of trainers.

Program Area 7: Strategies for Sustainable Use of Coastal Resources

The philosophy of sustainable use of coastal resources is at the core of the national policy on ocean and coastal zone management. Under this program area, criteria and indicators for sustainable use will be reviewed.

Program Area 8: Monitoring, Evaluation and Reporting on the Implementation of Program Areas 1 To 7 Above

The successful implementation of the plan and its responsiveness to changing circumstances and needs will depend on monitoring and evaluation of implementation. Monitoring and evaluation are seen as essential parts of the cyclical and adaptive planning approach.

This area of action will lead to the development of a program for monitoring and evaluation of the implementation of the plan, national reporting, and the submission of recommendations for modification/improvements to the Council.

PHASE II: Consolidation of Phase I and Initiation of Additional Interventions

The specific details of Phase II will be defined based on the findings of Program Area 8: Monitoring, Evaluation and Reporting on Phase I. In Phase II, consolidation of Phase I program areas is given priority and new areas will be initiated. Program areas in this phase include:

Program Area 1: Program Preparation, Project Identification and Mobilization of Financial and Technical Resources

Actions in this program area will involve the identification and accessing of new sources and the continuation of existing support.

Program Area 2: Human Resources and Institutional Capacity Building

This program area will involve actions for the strengthening of agencies involved in matters related to ocean and coastal zone management and, strengthening of human resources capacity for undertaking coastal management projects.

Program Area 3: Economic Valuation of Coastal Resources

In this Phase, research on the characterization of economically important coastal resources of Jamaica, valuation of habitats, and a revision of the country study on coastal resources will be undertaken.

Program Area 4: Monitoring, Evaluation and Reporting on the Implementation Of Program Areas 1 to 3 Above

The actions in this area will continue from those of Phase I to the completion of the monitoring and evaluation functions for the Plan.

Program Area 5: Planning Integrated Coastal Zone Management Action Plan Cycle Two

This program area will involve the initiation of planning for the second cycle of the Plan.

Overall responsibility for coordinating the implementation of the plan will rest with the National Council on Ocean and Coastal Zone Management. The Council will benefit from capacity-building support during Phase I. It is envisaged that in the second planning cycle active integration of coastal management sectors will be incorporated into the agendas at the sub-national levels (i.e. sectoral, municipal and local) will begin.

EXECUTIVE SUMMARY TABLE							
Project No.	Programs	Overall Responsibility	Time Frame (Years)			Estimated Budget US\$	Policy Strategies
			0-2	3-5	>5		
	Phase I Strengthening the Role of the Council						
1	To Strengthen the capacity of the Council for integrated management of coastal zone	Council	✓			3,300	4.5.6
	Program Preparation, Project Identification and Mobilization of Financial and Technical Resources						
2	Identification and elaboration of program areas	Council	✓			28,050	----
3	Ensure short and long-term financing and sustainability of the action plan	Council, NEPA	✓	✓		93,500	4.1.5, 4.5.1, 4.5.3, 4.5.4, 4.5.7
4	Mobilization of Implementing Agency	Council	✓	✓		27,500	4.5.6
5	Mobilization of financial resources from national inputs	Council, NEPA	✓	✓		15,950	4.1.7,4.2.1
6	Mobilization of financial resources from international donor community	Council, NEPA	✓	✓		25,850	----

Project No.	Programs	Overall Responsibility	Time Frame (Years)			Estimated Budget US\$	Policy Strategies
			0-2	3-5	>5		
7	Review of incentives and disincentives for conservation and sustainable use of coastal resources	Council, NEPA	✓	✓		23,100	4.1.6, 4.2.4, 4.2.7, 4.5.1, 4.5.4, 4.5.7
8	To create a coastal management trust fund	Council	✓			13,250	----
	Consolidation of legal, administrative and enforcement framework						
9	Comprehensive review and updating of national legislation relating to coastal management	Council	✓			---	4.1.7, 4.1.9, 4.5.7
	Human resources and institutional capacity building						
10	Strengthening of local government, NGO and community organizations	Council, NEPA	✓	✓		61,600	4.5.6

Project No.	Programs	Overall Responsibility	Time Frame (Years)			Estimated Budget US\$	Policy Strategies
			0-2	3-5	>5		
	Research and Information on Coastal Management Issues						
11	Development of Center of Excellence	Council	✓	✓		3,930,520	4.5.2
12	Preparation and Implementation of a Prioritized Program of Coastal Management Research for Jamaica and Maintenance of A National Database	Council, NEPA	✓	✓		12,100	4.1.6, 4.2.1, 4.2.3, 4.3.1
	Public Awareness and Education						
13	Preparation of instructional material for coastal environmental education and awareness programs	Council, Ministry of Education	✓	✓		742,500	4.5.2, 4.5.3, 4.5.7
14	Incorporating studies on environmental and coastal issues and training of teachers to teach courses on environment and coastal management	Council, Ministry of Education	✓	✓		26,950	4.1.5, 4.1.6, 4.5.3

Project No.	Programs	Overall Responsibility	Time Frame (Years)			Estimated Budget US\$	Policy Strategies
			0-2	3-5	>5		
15	Developing non-formal methods of promoting coastal management education and awareness	Council, Ministry of Education	✓	✓		38,500	4.2.1, 4.5.3, 4.5.7
	Strategies for sustainable use						
16	Criteria for indicators for sustainability of coastal resources	Council, NEPA	✓			6,600	----
17	Developing national action plan for fisheries, forestry and agriculture management	Council, NEPA, Fisheries Division, Forestry Dept.	✓	✓		767,200	4.1.1, 4.1.2, 4.1.3, 4.1.4
18	Developing national policy on enforcement of laws	Council, NEPA	✓			5,500	4.1.6, 4.2.1, 4.2.4, 4.5.5
19	Incorporating the role of science in the decision making process	Council,	✓	✓		----	4.2.4, 4.4.1
	Monitoring, Evaluation and Reporting of the Action Plan						
20	Monitoring, Evaluation and Reporting of the Implementation of Program Areas	Council, NEPA	✓			13,200	4.1.5

Project No.	Programs	Overall Responsibility	Time Frame (Years)			Estimated Budget US\$	Policy Strategies
			0-2	3-5	>5		
	Phase II						
	Human Resources and Institutional Capacity Building						
21	Strengthening of agencies and groups involved in integrated coastal zone management	Council		✓		7,700	----
22	Strengthening capacity of other institutions to undertake coastal management projects	Council		✓		13,200	----
	Research and Information on Integrated Coastal Zone Management						
23	Pilot study on economic valuation of Jamaica's Coastal Resources	Council, NEPA		✓		90,750	----

Project No.	Programs	Overall Responsibility	Time Frame (Years)			Estimated Budget US\$	Policy Strategies
			0-2	3-5	>5		
	Monitoring, Evaluation and Reporting of the Implementation of Program Areas 1 to 3 above						
24	Evaluation of implementation of initial cycle of the Plan	Council, NEPA		✓		13,200	----
	TOTAL BUDGET					5,960,020	

LIST OF ABBREVIATIONS

AGD	Attorney General's Department
AAJ	Airports Authority of Jamaica
CAA	Civil Aviation Authority
CASE	College of Agriculture Science and Education
CMI	Caribbean Maritime Institute
CMS	Center of Marine Sciences
COCZM	Council on Ocean and Coastal Zone Management
CPC	Chief Parliamentary Committee
DBML	Discovery Bay Marine Laboratory
DPP	Director of Public Prosecution
EFJ	Environmental Foundation of Jamaica
FD	Fisheries Division
FD	Forestry Department
JCF	Jamaica Constabulary Force
JDF	Jamaica Defense Force
JNHT	Jamaica National Heritage Trust
JTB	Jamaica Tourist Board
MA	Ministry of Agriculture
MAJ	Maritime Authority of Jamaica
MF	Ministry of Finance
MGD	Mines and Geology Division
MLE	Ministry of Land and Environment
MOH	Ministry of Health
MPM	Metropolitan Parks and Markets
MTW	Ministry of Transport and Works
NEPA	National Environment & Planning Agency
NRCA	Natural Resources Conservation Authority
NGO	Non-Governmental Organization
NWC	National Water Commission
OPM	Office of the Prime Minister
PAJ	Port Authority of Jamaica
PCs	Parish Councils
PIOJ	Planning Institute of Jamaica
RADA	Rural Area Development Agency
SAJ	Shipping Association of Jamaica
SRC	Scientific and Research Council
TPDCo	Tourism Product Development Company Ltd.
Utech	University of Technology
UWI	University of West Indies, Mona Campus
WRA	Water Resources Authority

A total of 24 projects have been proposed in the Action Plan. Projects are linked as clusters under program areas. Details of the individual actions are given as follows:

FOUNDATION PROGRAMS – PHASE I (YEARS 1-2 OF THE PLAN)

PROGRAM AREA 1: STRENGTHENING THE ROLE OF THE COUNCIL

Project 1: To Strengthen the Council’s Capacity for Integrated Management of Coastal Zone

Objectives

- To decide whether to strengthen the existing role of the Council or, to assign a new body for the implementation of the policy on ocean and coastal zone management
- To decide the new role of the Council to oversee the implementation of the Policy

Activities

- Conceptualize the role and responsibilities of the Council, or the body assigned to have a direct involvement in the implementation of the Policy.
- Prepare a plan for its governance and administrative structure
- Prepare a budget for the Council or, the assigned body
- Once the role for implementation has been conceptualized and planned, work to begin on the legislation to give a legal basis for implementation of the Policy.

Scope

National

Timing/Duration

Immediate

Overall/Secondary Responsibility

Council

Budget (1 year)	US\$
Miscellaneous	3000
Contingency (10%)	300
<u>TOTAL</u>	<u>3300</u>

Activities (Phase II- years 3 to 5)

- It is recommended that the Council, as the Board of the Implementing Agency, will regularly monitor:
 - Strengthening of existing positions through training.
 - Consolidation and expansion of the coastal management work program.
- To initiate Council meetings to:
 - Discuss new projects;
 - Develop partnerships with NGOs to identify and disseminate best coastal management practices.
- The Council, through the Implementing Agency, will deploy the expertise, resources, and knowledge of its member organizations, and individuals. It will identify and facilitate projects and programs for which innovative management solutions offer significant, measurable benefits.
- With the active participation of its public, private, and non-profit sector representatives, the Council, through the Implementing Agency, will serve as a sponsor and facilitator of results-based, cross-boundary projects.

PROGRAM AREA 2: PROGRAM PREPARATION, PROJECT IDENTIFICATION AND MOBILIZATION OF FINANCIAL AND TECHNICAL RESOURCES

The identification, elaboration and prioritization of all the program areas is necessary at the beginning to identify the financial and technical resources required to ensure the successful implementation of the Action Plan. Hence, this program area is extremely critical and will be given the highest priority in the early stages of Phase 1 of the plan. Existing strategies for obtaining financial and technical resources will be consolidated.

Project 2: Elaboration of Program Areas

Objectives

- To source skills to implement the projects
- To prioritize the projects

Activities

- Create and fill a position of project development specialist with the Council. The responsibilities of this position are to elaborate each program area, identify the staff, equipment and other materials required to achieve those objectives within a specified time frame.
- Design and apply methodologies and indicators for monitoring and evaluating project progress.

Timing/Duration

First six (6) months in Phase I

Overall/Secondary Responsibility

Council

Budget (6 Months)

US\$

Project development specialist	12,000 (US\$ 2000/month x 6 months)
Equipment	4,000
Computer	1,500
Travel	2,000
Research costs	3,000
Communication	3,000
Contingencies (10%)	2,550
TOTAL	28,050

Performance Indicator

At the end of first six months of the implementation of the plan, the completion of:

- Project documents relating to the Policy and this Plan.
- A plan structure for the Implementing Agency.

Project 3: Ensure Short and Long-Term Financing and Sustainability of the Action Plan

Objectives

- To source the skills to obtain short- and long-term financing for sustainability of the Action Plan
- To design and implement sustainable financing mechanisms for plan implementation

Activities

- Create and fill the position of fund raising specialist with the Council. The responsibilities of this position are to identify projects and obtain financial and technical support for the projects under the action plan.
- Develop the following categories of initiatives (by the fund raising specialist):
- Mobilization of financial resources from national sources:
 - Public
 - Private
 - Community
- Mobilization of financial resources from the sustainable use of coastal resources and other innovative funding mechanisms

- Mobilization of financial resources from the international donor community:
 - Public
 - Private
- Creation of a coastal management trust fund
- Up-grade skills of counter-part to the fund raising specialist through participation in key training workshops (e.g. GEF project development workshops).

Duration/Timing

Immediate and, throughout Phase I of the plan.

Overall/ Subordinate responsibility

NEPA, Council

Budget (Two years)	US\$
Fund raising specialist	60,000 (US\$ 2500/month x 24 months)
Equipment	covered under project 1
Computer	covered under project 1
Training of counterpart	5,000
Travel	2,000
Research costs	3,000
Communication	15,000
Contingencies (10%)	8,500
TOTAL	93,500

Project 4: Mobilization of Implementing Agency

Objectives

- To source the skills to create & oversee implementing agency
- To identify sustainable technical resources for plan implementation

Activities

- Create and fill the position of project manager within the Council to head the body responsible for implementing the policy. The responsibilities of this position are to oversee the implementation of the action plan.
- Develop the structure for this body responsible for implementing the policy. The Project Manager will report to the Council. This will be a permanent Position.
- The Project Manager identified will also prioritize technical resources needed for the projects under the action plan.
- Mobilization of technical assistance from international sources.
- Coordinate the management of projects, once the fund raising specialist has accessed funds.

Duration/Timing

At the beginning of year 2 of Phase I, to the end of Phase I

Overall/Secondary Responsibility

Council

Budget	US\$
Project Manager	60,000 (US\$ 2500/month x 24 months)
Equipment	covered under project 1
Computer	covered under project 1
Training of counterpart	5,000
Travel	2,000
Research costs	3,000
Communication	15,000
Contingencies (10%)	8,500
TOTAL	93,500

Performance Indicators

At the end of year 2 of the plan the following will be ready:

- A plan structure for the Implementation Agency.

Project 5: Mobilization of Financial Resources from National Inputs

Objectives

- To obtain necessary financial support for integrated coastal management initiatives
- To complement the local investment, encourage foreign donor support in coastal resource conservation

Activities

- Review of opportunities by fundraising specialist. Areas to be examined include:
 - Community inputs: in-kind contribution (knowledge, information, and labor)
 - Private sector: funds and in-kind contribution (sponsorship of activities, green investment funds, "adopt-a-beach/forest" schemes; lottery proceeds)
 - Non-governmental: funds and in-kind contribution
 - Governmental: increased government budget
- Develop demonstration projects to test selected priorities
- Accessing and administering funds
- Design and indicators for monitoring and evaluating impacts.
- To upgrade the level of contingency planning in terms of equipment and training of personnel.

Duration/Timing

Six months after the implementation of Phase I; throughout Phase II

Overall Responsibility

Council, NEPA

Secondary Responsibility

PAJ, MAJ, SAJ, SRC, CAA, MTW, AAJ, NRCA, WRA, NWC, PAJ, FD, UWI, RADA, MOH, PCs, MPM, SWMA, MGD, EHU, NGOS

Budget (Five years)

US\$

Fund raising specialist	covered under project 1
Project coordinator	filled by relocation
Local travel	3500
Research	3000
Communication	covered under project 1
Workshops (3)	3000
Demonstration project	5000
Contingencies (10%)	1450
TOTAL	15950

Performance Indicators

- Expenditure reduction through reduction of duplication of effort, streamlining activities, and strategic actions to ensure maximum mileage by the coastal management coordinator

Project 6: Mobilization of Financial Resources from International Donor Community

Objectives

- To encourage donor investment in the integrated management of Jamaica's coastal zone.
- To use the donor investment as a basis to develop project documents for the priority elements of the plan.

Activities

- Identify multilateral, bilateral, and private donor agencies to be targeted.
- Convene meetings with the pertinent agencies to match their interests with project priorities.
- Prepare project proposals.
- Strengthen abilities of members of the Council, agencies and groupings involved in coastal management (including public, private and community) to seek their own funding for integrated coastal management activities. This will include covering a series of proposal preparation and fundraising workshops.

Duration/Timing

Immediate; throughout Phase I and Phase II

Overall/Secondary Responsibility

NEPA, Council

Budget (Five years)	US\$
Fund raising specialist	covered under project 1
Meeting with donors (individually and collectively)	1500
Workshops – 3 (project preparation and fundraising)	3000
Research	3000
Follow up with agencies	1000
Communication	15000
Contingencies (10%)	2350
TOTAL	25850

Project 7: Review of Incentives and Disincentives for Conservation and Sustainable Use of Coastal Resources

Objective

- To review incentives and disincentives and thereafter put in place incentive measures that would be economically and socially beneficial and contribute to the conservation of coastal resources.
- To develop mechanisms to return profits from the sustainable use of coastal resources to the management of coastal resources i.e. bridge the gap between the private benefits and the costs of conservation.

Activities

- Review opportunities and methodologies developed by fund raising specialist.
- Select priorities in light of Jamaica's specific cultural and social context.
- Develop pilot projects to test selected priorities.
- Design and apply methodologies and indicators for monitoring and evaluating impacts.
- To utilize returns from nature tourism.
- Regularize local markets for sand to reduce illegal sand mining.
- Conduct a feasibility study for the development of cooperatives within the small-scale industry sector to utilize semi precious stones and marbles.
- To study the economic implications of tax incentives to promote the establishment and preservation of protected areas.

- To study the economic implications of channeling the user fees, taxes, fines, levies and surcharges into the ICZM program.
- Provide incentives to encourage parties to negotiate and utilize alternative conflict resolution.
- To study the financial implications of developing an award system for the sectors that are certified under ISO 14000.

Scope

Incentive measure to be reviewed and considered under the project will be national in scope.

Timing/Duration

Six months after the start of implementation of the Plan and throughout Phase II.

Overall Responsibility

Council, NEPA

Secondary Responsibility

Ministry of Finance, Fisheries Division, Agriculture Department, Forestry Department, Commission of Mines, MGD, UWI, NRCA, PCs, MPM, MFA, PIOJ, EFJ, MLE, AGD, CPC, NGOs

Performance indicators

- Recruitment of consultant
- Participation of stakeholders

Means of verification

- Consultant's report
- List of incentives/disincentives

Budget (Five years)	US\$
Hiring of consultant (3 months)	7500
Research/Training of counterpart	3000
Communication	3500
Pilot project	5000
Miscellaneous	2000
Contingencies	2100
TOTAL	23,100

Project 8: To Create a Coastal Management Trust Fund.

Objective

- Invest endowment funds for sustainable financing of coastal zone management.

Activities

- Access administer and protect funds
- Receive project applications for coastal zone management and disburse funds

Duration/Timing

The project to begin at year 2 of the Plan and continue to the end of Phase I

Overall Responsibility

Council

Secondary Responsibility

NRCA

Budget (2 years)	US\$
Project coordinator	filled by relocation
Local travel	3500
Research	3000
Communication	3000
Workshops (3)	3000
Contingencies (10%)	1250
Total	13250

Performance Indicators

At the end of Phase I, the trust fund should be functional.

PROGRAM AREA 3: CONSOLIDATION OF LEGAL, ADMINISTRATIVE & ENFORCEMENT FRAMEWORK

Project 9: Comprehensive Review and Updating of National Legislation Relating To Coastal Management

Objectives

- To review and upgrade national capability to regulate access to and use of coastal resources and to integrate the efforts of coastal zone management.

Justification

The legal and institutional framework for integrated coastal zone management in Jamaica is fragmented, inconsistent and incomplete. Government departments and agencies, as well as private sector are often in competition or conflict with each other over their differing roles and interests. Although, Jamaica is an archipelago, land and development issues have often been treated as more important than, and even separate from, water and coastal issues. And, the importance of the richness and variety of the seawater resources has not always been fully appreciated resulting in inadequate legal and financial support for initiatives to conserve those resources and keep them sustainable for the future.

Activities

- The coastal zone is to be defined given Jamaica's status as an archipelagic state.
- Broad-based Coastal Zone Management Act should be developed and drafted, which would take into account linkages with other key environmental and natural resources laws (i.e. fisheries, forestry, agriculture, land etc.)
- The role of fisheries department regarding coastal zone management and planning coordination to be clarified and better defined to ensure the protection and enhancement of both the coastal zone area and fishery resources in the Act
- The role of the Council on Ocean and Coastal Zone Management is to be clarified in the Act taking into account the Center of Excellence and the Implementing Agency.
- The role and involvement of local planning authorities and Parish Councils, as well as NGOs and general public is to be strengthened and formalized in the Act.
- To develop a framework for accountability for responsible agencies
- Implementing legislation for Public trust doctrine as regards coastal zone (Common Heritage of Jamaicans)
- Allow NGOs and community groups to have locus standi in respect of advocacy for natural resources.
- Develop legislation to incorporate the provisions of international conventions on prevention of pollution from ships (MARPOL, London Convention, OPRC, CLC, and FUND Conventions).
- Develop legal provisions to support certification of sea and airports under ISO 14000.
- Support initiatives for revision of contingency plans.
- Develop rules that govern Alternative Dispute Resolution.
- To ensure by law that a cost-benefit analysis (including environmental costs) is carried out for prospects such as for any port expansion.

Overall Responsibility

Council

Secondary Responsibility

UWI, NRCA, CMS, SRC, MAJ, PAJ

Budget

Nil

Timing/duration of implementation

By the end of Phase I.

PROGRAM AREA 4: HUMAN RESOURCES AND INSTITUTIONAL CAPACITY BUILDING

This program area addresses the development of capacity to meet the new and additional requirements in the area of coastal zone management.

Project 10: Strengthening of Local Government, NGO and Community Organizations

Objectives

- To strengthen the capabilities of local government, non-governmental agencies and community organizations to plan their coastal management priorities.
- To strengthen the capabilities of local agencies to assist in the implementation of projects identified in the action plan

Activities

- Central government to oversee strengthening of local government agencies because only when local government is involved can the policy be implemented effectively.
- Human resource capacity building – Training NGOs, Local government and community leaders
- Training in sourcing of funds
- Convene local meetings (Parish Coastal Zone Management Committees) on the Action Plan (for the purposes of education, orientation, implementation and sharing knowledge) with:
 - Representatives of the Parish council,
 - Local/municipal organizations
 - Local NGOs
 - Community Groups
- Convene short fund-raising, training and project planning workshops for these local organizations
- Implement a pilot project on integrating coastal management into local planning (implementing agency to select one Parish as a pilot project)
- Upgrade local institutional capacity for technical assessment and enforcement to monitor water quality
- Develop partnerships between NGOs, local government and local community organizations to identify and disseminate best coastal management practices.
- Train in enforcement of laws.
- Convene meetings with groups from two or more parishes to share ideas.

Scope

Parish and local councils

Timing/Duration

At the end of year 1 of Phase I to beginning of Phase II (Years 2 to 3)

Overall/Responsibility

Council, NEPA

Secondary Responsibility

Parish Councils, community groups, NGOs

Budget (2 Years)**US\$**

Project coordinator	to be filled by relocation
Pilot project leader	to be filled by relocation
Community organizer specialist	48000 (US\$ 2000/month x 24 months)
Workshops (2)	2000
Pilot project (1)	5000
Miscellaneous	1000
Contingencies (10%)	5600
TOTAL	61600

Performance Indicators

By the end of Phase 1, the completion of one:

- Workshop
- Educational outreach activity
- Commencement of pilot project

Means of Verification

Progress report on each of the following:

- Workshop
- Educational outreach activity
- Pilot project

PROGRAM AREA 5: RESEARCH AND INFORMATION ON COASTAL MANAGEMENT ISSUES**Project 11: Development of Center of Excellence**

A project proposal has been developed for the establishment of a Center of Excellence. It includes the cost for the acquisition of a research vessel. Please refer to Annex I.

Duration/Timing

Throughout Phase I and Phase II of the Plan

Overall Responsibility

Council

Secondary Responsibility

NRCA, UWI, CMI, UTech, CMS, EFJ, NGOs

Budget

US\$ 3.93 million

Project 12: Preparation and Implementation of a Prioritized Program of Coastal Management Research for Jamaica and Maintenance of a National Database

Objectives

- To establish national needs and priorities of coastal research
- To produce sub-projects for the prioritized national needs of coastal research
- To establish guidelines on the responsibilities of storing, access, sharing and use of coastal information among local institutions involved in coastal issues
- To satisfy the physical and human requirements for establishing a computer network between institutions involved in coastal management issues
- To secure funding and research agencies to implement sub-projects
- To procure and install the physical infrastructure for the network and to train personnel for operating it within the stipulated guidelines

Activities

- Characterization of significant habitats, species and biological communities, living and non-living resources and their interrelationships;
- Identification of problems that have contributed to unsustainable use of resources and amenities;
- Assessment of short and long-term implications of such problems for the environment and society;
- Selection of priority sites for designation as parks and protected areas;
- Preparation of site specific management plans and define access areas;
- Monitoring of priority components of biodiversity;
- Identification of particular areas and conditions that warrant priority within the ICZM program;
- Identification of stakeholders for priority ICZM issues, their responsibilities and interests;
- Utilizing the knowledge of traditional resource users to contribute to the data network;

- Identification of existing sources of information in Jamaica;
- Collection and compilation of relevant information;
- Identification of institutional deficiencies to manage their own data;
- Determination of the sustainable extraction quantities of sand;
- Identification of potential on-shore, near-shore and off-shore sand deposits;
- Determination of the potential areas of mineral mining;
- To review the existing water quality standards;
- To determine the budget required for continued assessment of water quality.

Scope

The scope of the research topics will extend to the national level

Timing/Duration

Towards the end of Phase I and throughout Phase II

Overall Responsibility

NEPA and Council

Secondary Responsibility

- All local research institutions involved in coastal research in the country
- Sectoral agencies
- Private sector representatives in the respective sectors
- MGD, UWI, NEPA, CMS, SRC, UTech, NGOs

Budget (4 Years)	US\$
Six workshops	6000
Coordinator	to be filled by relocation
IT Consultant (1) for 2 months	4000
Travel to agencies for consultation	1000
Contingencies (10%)	1100
<u>TOTAL</u>	<u>12100</u>

Performance indicators

- At the end of Phase I of the project, one workshop would have been held
- At the end of Phase 1 of the project, a number of research sub-projects would have started. At the end of Phase 2 of the project, a number of sub-projects would have been completed, and some others would be under progress.

Means of Verification

- Report on national needs and priorities on coastal research

- Proposals for sub-projects based on prioritized needs
- Funding contracts, research contracts, research findings, monitoring and evaluation report.

PROGRAM AREA 6: PUBLIC AWARENESS AND EDUCATION

Project 13: Preparation of Instructional Material for Coastal Environmental Education and Awareness Programs

Objective

- To provide the relevant material for guidance of students, instructors, drafters of curricula and syllabuses, as well as producers of audio-visual and non-formal educational aids.
- To prepare instructional material for non-formal community education.

Activities

- Review the existing syllabuses with a view to including coastal environmental issues.
- Conduct a survey of the existing environmental education and environmental promotional activities.
- List subjects
- Prepare instructional materials for schools and adults

Scope

National – to inform all programs

Timing/Duration

The project should start at the beginning of the program (year 1), so that material would be available to service the other projects. It is conceived as on going, covering the entire duration of the Action Plan, i.e. 5 years in this instance.

Overall Responsibility

Council, Ministry of Education

Secondary Responsibility

NEPA, UWI, CMI, UTech, EFJ, local government administrations

Budget (5 years)	US\$
Salaries of teachers (5)	450000 (@US\$ 1500/month x 5 years)
Teacher trainer (1)	120000 (@ US\$ 2000/month x 5 years)
Salary of science writer (1)	90000 (@ US\$ 1500/month x 5 years)
Salary of coordinator	filled by relocation
Travelling & subsistence (Coordinator & trainers)	10000
Material	5000
Contingency (10%)	67500
TOTAL	742,500

Performance Indicators

- Early formation of multidisciplinary team
- Compilation of relevant environmental data by NEPA
- Production of instructional material

Means of Verification

- Multi-disciplinary team constituted
- Mechanism established by NEPA for garnering of information on coastal resources
- Timely production of materials required to implement projects in program

Project 14: Incorporating Studies on Environment and Coastal Issues and Training of Teachers to Teach Courses on Environment and Coastal Management

Objective

- To ensure that pupils/students of all schools receive formal instruction on the nature and value of coastal resources and on the inter-relationship between sustainable use of coastal resources and the coastal environment. Non-formal approaches may also be pursued, where these may help to reinforce concepts covered in the formal syllabus.
- To train teachers to teach the courses on environment and coastal issues adumbrated in project above.

Activities

- Develop recommendations for the integration of environmental education into school curriculum.
- Promote use of distance education methods as a training tool.
- Periodical monitoring of environmental awareness levels including sociological research to study the efficiency of environmental awareness and promotion measures.
- Organize a national environmental studies competition, contest, quizzes on annual basis.
- Include a chapter on promoting environmental education and public participation in the State of the Environment Report (published by NRCA).
- Conduct advanced environmental education training for teachers (including pre-school).

- Conduct nature conservation and environmental protection courses at UWI (basics for all faculties, specific courses obligatory for obtaining teachers qualification).
- Development of teaching materials for primary and secondary schools in accordance with the principles of environmental education.
- Creation of advanced teaching materials for teachers and journalists.
- Stimulate interdisciplinary environmental training in pedagogy and behavioral sciences.
- Training of members of NGOs.
- Identify capacity needs of agencies that will be responsible for training personnel from public and private sectors.

Scope

This project is conceived as one that is national in scope, involving the entire formal education system.

A survey of curricula of schools will be undertaken to determine the extent to which coastal management issues are addressed, and to recommend changes, which would help to achieve project objectives.

With the collaboration of the Ministry of Education and relevant NGOs, pilot projects will be instituted to ensure viability of the proposed course/subject offerings.

Timing/Duration

It is intended that this project will be introduced from the inception of the program and will cover the entire period in Phase I and Phase II.

Overall Responsibility

Council, Ministry of Education

Secondary Responsibility

UWI, CMS, NEPA, MA, MLE, EFJ, NGOs

Budget (5 years)	US\$
Workshops (5)	5000
Honoraria for instructors	15000
Project coordinator	filled by relocation
Local travel for coordinator	2000
Materials	2500
Contingencies (10%)	2450
<u>TOTAL</u>	<u>26950</u>

Performance Indicators

- Establishment of task force drawn from local parties
- Progress reports on development of curricula and syllabuses

- Syllabus for training of teachers on issues of coastal environment implemented by the schools/UWI

Means of Verification

- Task force constituted, periodic reports (6 monthly) of task force submitted, progress reports on curriculum and syllabus reforms
- Progress reports on performance of teacher trainees submitted in a timely manner
- Adjustments to syllabus based on progress reports

Project 15: Developing Non-Formal Methods of Promoting Coastal Management Education and Awareness

Objective

- To provide a vehicle for the rapid and effective dissemination of information on the role of coastal management in conserving coastal resources at all levels.
- The project is intended to complement formal programs of instruction on the same theme, so that the general population may become aware of coastal management issues and thereby contribute to conservation and responsible use of coastal resources.

Activities

- To organize regular radio program linked to radio news (e.g. “the most important coastal environmental event of the week”).
- To publishing local coastal environmental information maps.
- To organize regular forums and dialogues between the NGOs and the Government.
- To study the scope of garnering financial support for environmental activities and environmental studies coordinated by NGOs.
- To establish an NGO advisory panel at the Ministry of Environment.
- To encourage private enterprises to support the activities of NGOs with financial and non-financial means (e.g. renting of bus, making it possible to use their equipment etc.).
- To create an association of environmental journalists.
- To provide training and education for outside parties to mediate/facilitate/arbitrate in disputes, with schemes and guidelines for the recognition of qualified mediators/facilitators/arbitrators.
- To identify courses and programs suitable for managers and decision-makers.
- To educate and motivate people to connect to the sewage system.
- To promote awareness of the need to preserve cultural and archaeological heritage sites.
- To promote alternative tourism options such as eco-tourism, heritage and community based tourism.

Scope

National

Timing/Duration

The project is recommended for immediate implementation and will continue for the duration of the plan.

Overall Responsibility

Council, Ministry of Education

Secondary Responsibility

UWI, UTech, CMI, NRCA, EFJ, NGOs

Budget (5 years)	US\$
Local project activities	20000
Coordinator	filled by relocation
Travelling and subsistence	10000
Materials	5000
Contingency (10%)	3500
TOTAL	38500

Performance Indicators

Reports on workshops and seminars conducted by sectoral agencies, regional and local administrations

Preparation and distribution of flyers, brochures, posters and other public education campaign materials, use of electronic and print media in propagation of information to public.

Efforts of NRCA to train local “facilitators” and produce visual aids to promote awareness at the level of communities, and involvement of community members in preparation of local coastal resource inventories.

Means of Verification

- Workshops and seminars conducted
- Information literature prepared and distributed, and media participation secured
- Community involvement stimulated by “facilitators” trained by NEPA.

PROGRAM AREA 7: STRATEGIES FOR SUSTAINABLE USE OF COASTAL RESOURCES

Project 16: Criteria and Indicators for Sustainability of Coastal Resources

Objectives

- To establish criteria and indicators for sustainability of coastal resources in Jamaica
- To monitor according to those criteria

Activities

- Establish the criteria
- Develop infrastructure to conduct environmental audits of the sea ports, airports and tourism industry and arrange for ISO 14000 certification.
- Develop infrastructure to monitor, and to reduce, effluent discharge
- Undertake feasibility study for sewage treatment plants at strategic locations (with reference to population centers), specifically for the major tourist areas.
- Generate funds to establish a Ship-Generated Waste Facility at Kingston being supported by SAJ.
- Conduct a study to ascertain the carrying capacity of the coastal environment in order to plan future tourism activities.
- Determine the infrastructure capacity to support sustainable tourism activities.
- Conduct feasibility study for the level of toxic materials entering the coastal environment through the ports and subsequent upgrading of dry-dock facilities.
- Assess the capacity of sensitive marine areas to accommodate shipping activities.
- Create funding mechanisms to sustain protected areas.
- Undertake feasibility study to provide funding mechanisms to interest groups to resort to alternative conflict resolution.

Scope

Criteria and indicators will apply nationally

Timing/Duration

Due to the importance of criteria and indicators for planning, management and monitoring, this activity will occur as early as Phase 1. The project will be spread over a period of 2 years.

Overall Responsibility

NEPA, Council

Secondary Responsibility

Centre of Excellence, TPDCo, JTB, NRCA, OPM, UWI, MFA, PIOJ, UTech, EFJ, PIOJ, NGOs

Budget (2 years)	US\$
Workshops (6)	6000
Coordinator (2)	filled by relocation
Reporters (2)	-- as above --
Contingency (10%)	600
TOTAL	6600

Performance Indicators

- During Phase 1, six workshops and a number of consultations would be held

Means of Verification

- Workshop and consultation reports
- Final report
- Monitoring and evaluation report

Project 17: Developing National Action Plan on Fisheries, Forestry Management and Agriculture

Requirements for an Effective Fisheries Management in Jamaica

The Plan for Managing Fisheries of Jamaica, as it stands today, suggests the following interventions:

- Additional gear restrictions
- Designation of marine parks
- Ensuring limited access
- Enforcement of size limits
- Enforcement of closed areas/seasons
- Additional funding
- Generating public awareness
- Enforcement of laws

In order to overcome the aforementioned lacunae in fisheries management, the way ahead is co-management between communities and the government through the Fisheries Division.

There are two issues that require immediate action in the fisheries sector. First, there is a concern that fish catches are declining in Jamaica. Second, due to use of explosives for fishing, the coastal environment is being damaged. There is therefore, a need to recognize that fishing communities themselves hold the key to preventing this decline, and the successful management of fishery resources lies in the hands of the fishing communities that harvest these resources. Regardless of national legislation and enforcement, the responsible management of fisheries resources cannot be achieved without the fishing communities themselves seeing it as their responsibility rather than solely that of the government.

The decline in fish stocks and, the damage to the coastal environment in Jamaica can be attributed to:

- Overexploitation
- Destructive fishing methods (dynamite fishing)
- Inadequate government support

Government response, in the past has focused to national laws to protect fish stocks. National regulations rely upon government enforcement and if that enforcement is poorly funded or stopped, then compliance with the regulations also stops. A lack of community ownership is another reason that government-imposed actions have failed – the community is given no ownership of either resource or problem and therefore feels no responsibility or accountability. This is also because the Fisheries Division has traditionally assumed responsibility for directing community actions related to fisheries.

Management Option for Jamaica

There are two types of management methods – top down and bottom up. What in essence will be sustainable will be a balance somewhere between the two. This is co-management. Presently, the Fisheries division, as repository of technical and scientific expertise, has so far assumed responsibility for taking actions to protect fish stocks and the marine environment. In co-management, the government representatives through the Fisheries Division, communities and other user groups through the NGOs manage fisheries resources on a cooperative or a shared basis.

A precursor for sustainable fisheries is that there must be community awareness of the marine environment, and a concern for existing problems.

Planning an Awareness-raising Campaign

Prior to embarking on a public awareness campaign, an annual work program will need to be prepared, listing:

Objectives

- Involving and raising community awareness in fisheries resource management.

Activities

- Recruitment of Extension Officers at Fisheries Division. As a basic requirement for a fisheries extension officer, the minimum skills and qualification should be:
 - Successful completion of final year of secondary school;
 - Good level of oral and written skills;
 - Knowledge of local culture in relation to holding village meetings;
 - Confidence in meetings in working with community groups;
 - Ability and desire to work with isolated communities;
 - Ability to work as part of a team;
 - Ability to drive a vehicle.

DESIRABLE QUALIFICATIONS

- Experience in working with communities;
- Experience in problem solving techniques;
- Degree in science or social science;
- Training, knowledge or experience in one or more of the following areas: biology, ecology, conservation, fishing, seafood handling and fisheries management;
- Ability to use word processing.

The Fisheries Division should aim to increase the number of active female staff members. Currently, many of the women employed in the Division have clerical or secretarial positions when they might be more profitably employed in the field.

It is worth noting at this stage that women are often more receptive to campaigns promoting conservation. In addition, not only do they have influence on the attitudes and behavior of members of their family, especially their children, but they are also likely to take a long-term view. A point to be noted here is that having female fisheries extension staff will make it easier, or actually more acceptable, to facilitate community meetings involving women (65% of the population lived within 5 km from the coast and 44% of the households are headed by women)¹.

- Before embarking on a community-based fisheries management program, an assessment of the level of community awareness will need to be ascertained. In order for communities to manage their fisheries resources, they must have:
 - An awareness of problems with the marine environment and fisheries resources;
 - A concern for these problems and their effects on the community;
 - A desire and willingness to take actions to address these problems.
- With the assistance of Fisheries Division, to appoint community leaders.
- To organize meeting with community leaders.
- To organize community group meetings.
- To formulate village fisheries advisory committee
- To formulate a village fisheries management plan (assisted by the extension staff from the Fisheries Division) that should include:
 - The names of all members of the groups and committees
 - The names of the support staff from the Fisheries Division
 - A background of the village's marine environment and fisheries
 - A map of the village and fishing areas
 - Details of tradition based controls of fishing (if any)
 - Undertakings and actions to be taken by the community
 - Support to be provided by the Fisheries Division
- The plan is to be printed by the Fisheries Division and returned to the Fisheries Advisory Committee of the village.
- The plan is to be presented to the village leaders at a formal and culturally acceptable meeting. This meeting is to be attended by the Fisheries Division as observers to indicate the importance of the meeting.
- A public education campaign to counter the use of explosives could include a series of talks given to community groups, and the distribution of posters emphasizing the environmental dangers of using such damaging fishing methods.

Duration/Timing

Immediate and throughout Phase I and Phase II

Overall Responsibility

Council, NEPA, Fisheries Division

¹ State of the Environment – The 1997 Report

Secondary Responsibility

PCs, Existing as well as newly formed Fisherman's cooperatives

Budget (5 Years)	US\$
Extension Officers (2)	120,000 (2 x US\$ 1000/mth x 60 months)
Vehicle	300,000
In house training	10,000
Workshops (5)	5,000
Equipment & field visits	7,000
Contingencies (10%)	44,200
TOTAL	486,200

Performance Indicators

Regular contact between communities and extension staff of the Fisheries Division (on a monthly basis) to review the management plans of all villages in the program, and to ensure that the undertakings of both the village and the Fisheries Division are progressing.

Technical advice and training

Review of fisheries management in participating communities

Means of Verification

Regular progress reports by the Fisheries Division to the Council on the progress of community fisheries management where the Fisheries Division has made an intervention.

DEVELOP SUSTAINABLE FORESTRY PRACTICES AND WATERSHED MANAGEMENT

Jamaica has a significant area of forest coverage amounting to 265,000 hectares that contribute to the country's development². This forest resource has the potential to make a major contribution to development by meeting basic needs in energy and other forest products, by contributing to food security, by sustaining industries which provide employment and income, and by maintaining environmental stability. But if this potential to provide goods and services and to contribute to environmental stability on a continuing basis is to be fully realized, uncontrolled exploitation must be replaced by appropriate management of the entire forest production chain, from the establishment through maintenance and harvesting of forest crops to the processing and marketing of forest products.

In Jamaica, natural and plantation forests are usually located within upper reaches of watersheds. The removal of these trees has a detrimental effect on the coastal zone by way of increased flooding, sedimentation and, altering of river courses. The sedimentation results in the smothering of coral reefs and the subsequent reduction in fish stocks. In order to tackle this problem in the coastal ecosystem, an integrated effort will be required to start at the root cause of the problem of felling of trees in uplands.

It is now generally recognized in Jamaica that a significant cause of the destruction and degradation of the forests is the activity of the people who live in and around them and their dependence on the forestlands, and the wood, for their basic needs. There is no doubt that forestland will continue to be cleared for crop production in the future. As regards wood energy, it is estimated that already 41% of the population of Jamaica depend on fuel wood. The overall

² Ibid.

demand for fuel wood is predicted to grow over the medium term and is expected to remain a major forest product.

Considering the collective needs of Jamaica and in the light of the existing detrimental effects on the coastal zone as a result of the forestry sector, three priority areas should be selected, which are:

- A. Fuel wood and energy
- B. Forestry in land use
- C. Strengthening of institutions in forestry management

Priority Areas	Time Frame	Budget for five years
Fuel wood and energy	5 years	US\$ 161,000
Forestry in land use	5 years	
Strengthening of institutions in forestry management	5 years	US\$ 120,000
TOTAL	--	US\$ 281,000

A. Fuel Wood and Energy

Objective

- Aim at accelerating corrective actions and restoring fuel wood supplies to support national fuel wood and wood energy programs, development of wood-based energy systems for rural development, training and demonstration in support to fuel wood actions and intensification of wood energy research and development.

Activities

- Where the remaining tree resources can still supply substantial quantities of fuel wood, priority attention should be given to their protection and management and to conditions of access. Special efforts are necessary to install the necessary infrastructure and to improve the productivity of the natural woody vegetation.
- In creating additional fuel wood resources, preference should be given to the multiplication of small wooded areas and trees grown in the vicinity of the users. The multiple benefits of trees in providing fuel, timber, fodder, food and environmental protection, should stimulate people's interest in growing trees.
- People's participation on a massive scale is vital to the success of any fuel wood program. Information, motivation and extension based on appropriate socio-economic investigation of people's needs and aspirations are essential.

- Combined activities to increase supplies, to conserve energy and other natural resources, are appropriate ways of demonstrating to people how to improve their capability to act directly and appropriately within their own cultural and socio-economic context.
- Because a large group of fuel wood users in Jamaica are land-less and poor, ways must be found to safeguard their access to supplies and their participation in the benefits of fuel wood programs; this may include providing access to land for fuel and food.
- Develop the capabilities of local staff and rural people in the management of fuel wood; through training and extension in order to transfer the technical and managerial skills. This should be based on a clear understanding of needs and capabilities.
- Stimulate self-help initiatives and strengthen local organizations where appropriate.

B. Forestry in Land Use

Objective

- Utilizing the interface between forestry and agriculture, conserve the resource base for agriculture, watershed management and desertification control of upper reaches of the watersheds.

Activities

- Organizations concerned with rural development should place stress on the complementarity of agriculture and forestry. This may call for changes in the training of agricultural extension agents in order to familiarize them with the benefits of forest-based conservation practices, and the ways in which forestry can contribute to food security and to rural development.
- Agricultural credit schemes are inadequate for forestry, and the small farmer generally has no access to soft credit or other incentives which would enable him to contribute to conservation schemes of public interest. Funding for conservation and/or reforestation should therefore be included in projects related to the development of water resources flood protection, rural development and settlement schemes. For example, 4 % of electricity income can be applied to the watershed which has the potential to generate hydropower - 2% in rural electrification and 2% in watershed protection and restoration;
- Incentive schemes are essential if the small farmer is to be involved in afforestation and conservation. Various direct and indirect incentives, in cash or in kind, provided to farmers individually or in groups, should be tested. Revolving funds, managed by the community or by banking institutions, can prove to be successful.

Duration/Timing

Towards the end of Phase I and through Phase II

Overall Responsibility

NEPA, Council, Forest Department (FD)

Secondary Responsibility

MA, NRCA, UWI, WRA, SRC, NGOs

Potential international cooperating institutions: FAO, UNEP, USAID and UNESCO

Budget (4 years)

The financial requirements of this Program should cover:

- Program development activities: country fuel wood assessment and program formulation missions for identification of assistance needs of national fuel wood programs: **US \$ 30,000**
- Working group meetings including the travel of experts:
US\$ 8,000 (approximately)
- Consultancy funds to prepare the annual meetings: **US\$ 3,000**
- Information including audio-visual aids to promote political and public awareness and guidelines for land use planners, including operational guidelines for clearing of forestland: **US\$ 12,000**
- Preparation and dissemination of selected case studies showing impacts of deforestation on rural development in humid tropical ecosystems: **US\$ 8,000**

Assistance is required in establishing the information base, developing training and extension programs, strengthening the necessary institutional support, developing appropriate solutions for multi-purpose tree growing combined with agriculture and land protection, developing efficient conversion technologies for fuel wood and other products of trees and providing support to their dissemination.

A preparatory assistance project requires approximately **\$ 20,000 per year** of further assistance for a period of at least 5 years. A variable amount of funds is required to establish the required local infrastructure and support direct implementation.

The total cost of the Program would therefore be: \$ 161,000

C. Strengthening of institutions in forestry management

Objective

- To remove the institutional constraints impeding the conservation and proper utilization of forest resources through the strengthening of public forest administrations and related government agencies.
- To strengthen the institutional support for the private sector and local organizations, for the development of professional, technical and vocational training, of forest extension, and of forestry research.

(The development objective is to assist in developing the institutional structures, procedures and mechanisms needed to achieve the appropriate management of forest resources and to contribute to the prevention of the detrimental effects on the coastal environment).

Activities

- Environmental conservation groups, and other disciplines/ institutions concerned with the role of forests in protection and in securing social and economic benefits, should become allies of the foresters in building public opinion and in organizing pressure groups to improve policy, legislation and action programs. The national conservation strategies and the national plans to combat desertification and subsequent sedimentation of the coastal ecosystem, should be implemented with adequate emphasis on forestry.
- Efforts should be made to improve public awareness of the essential role of forestry in protecting the coastal ecosystem;
- A community forestry approach is desirable, for the establishment of an administrative framework for land use planning.
- Increased emphasis on practical training for forestry students by involving them in work in demonstration areas and in the implementation of other reforestation and conservation programs. Curricula and practical training must give adequate coverage to topics concerned with rural development, rural institutions, sociology and coastal area management.
- Strengthen the public forest administrations and related government agencies.
- Improvement and change of organizational structures, both within the existing public coastal forest administrations and between the public forest administrations and other government agencies.
- Preparation of national study on the institutional aspects of forestry development, identifying the factors that contribute to, or hamper the achievement of sustainability of the coastal ecosystem.
- Establishment or strengthening of appropriate systems of collection and analysis of information and statistics to initiate or improve coastal forestry planning.
- Strengthening of internal mechanisms of training, communication and organization in order to enhance the contribution of conservation of forestry to reducing the threats to the coastal ecosystem.
- Improvement of the managerial capabilities of forest administrations through assistance to their organizational and staff development efforts (training).

Duration/Timing

Towards the end of Phase I and through Phase II

Overall Responsibility

NEPA, Council, Forest Department (FD)

Secondary Responsibility

MA, NEPA, UWI, WRA, SRC, NGOs

Potential international cooperating institutions: FAO, UNEP, USAID and UNESCO

Budget

Assistance is required in all these activities including project proposals on various subjects. The approximate cost over a 5-year period is estimated at US\$ 40,000.

ORGANIZATION OF RURAL COMMUNITIES FOR FORESTRY DEVELOPMENT

Objective

The purpose of the project is to promote a rational and coordinated use of tropical forest resources and products by organizing people around forestry activities.

The objectives of the project would be:

- To develop incentives to encourage participation in forestry
- To promote rural organizations associations, cooperatives, etc.
- To promote the integration of rural organizations with forestry activities being carried out by public or private entities
- To develop forestry training programs for rural people

Justification

The organization of rural people in Jamaica with a view to solving their problems and defending their common rights is extremely important. The task of the forestry sector to maintain or recover the right of these communities to have access to the natural resources, which are essential for their subsistence, has not received sufficient attention in Jamaica. Also, many forest development strategies of the past did not recognize the benefits rural communities should derive from the forests through their participation in development activities. As it is important to protect forest resources, which will in turn reduce the threats to the coastal ecosystem, action must be taken to organize rural populations in such a way that they can contribute to forestry activities in a rational and coordinated manner, either independently or in conjunction with public or private agencies.

Activities

- Carry out socio-economic studies on the rural communities in forest zones;
- Set up rural organization programs for forestry activities in conjunction with public or private entities dealing with this subject;
- Establish a pilot project for rural community participation in forestry development;
- Establish forestry training programs for rural people; and
- Seek technical and financial assistance to support and improve field activities of rural organizations;

Duration/Timing

Towards the end of Phase I and through Phase II

Overall Responsibility

NEPA, Council, Forestry Department (FD)

Secondary Responsibility

MA, NEPA, UWI, WRA, SRC, NGOs

Potential international cooperating institutions: FAO, UNEP, USAID and UNESCO

Budget

Assistance is needed: (i) to train the staff of public forestry administrations and other public institutions dealing with the organization of rural people; (ii) to develop extension programs and tools; (iii) to promote and support rural development and rural organizations with a view to reorienting and reorganizing forestry institutions; (iv) to create appropriate mechanisms for product distribution and marketing; and to establish delivery services for rural communities.

The approximate cost over a 5-year period is calculated at around US\$ 40,000.

Strengthening the role of non-governmental organizations (NGOs) including cooperatives in forestry development in rural areas

Objectives

- The principal objective is to assess the structures, roles and needs of NGOs so that the more effective organizations may be strengthened in line with national strategies of forestry development in rural areas.

Justification

NGOs are assuming considerable importance in many forms of coastal management in Jamaica in recent years. Their efforts have been without a supporting legal framework.

National forest policies and laws have not yet been drafted to allow the mobilization in a much more effective and positive way of all such private efforts. In addition, there is clearly room for improvement in the management and support of NGOs if they are to play a more effective role in forestry development in the rural areas in the years ahead.

Activities

- A comparative assessment of the structure, role, and needs of each NGO.
- Identification and quantification of the accomplishments of each NGO in forestry in rural areas.
- On the basis of these analyses, identify those NGOs requiring support and the kinds of assistance required.
- Plan and develop support strategies for selected NGOs.

- Report on each phase of development and each phase of completion of the program.

Duration/Timing

Towards the end of Phase I and through Phase II

Overall Responsibility

NEPA, Council, Forest Department (FD)

Secondary Responsibility

MA, NEPA, UWI, WRA, SRC, NGOs

Potential international cooperating institutions: FAO, UNEP, USAID and UNESCO

Budget

Assistance is needed to assess the situation and potential of NGOs, to build up structures and mechanisms to improve coordination and action between them, the Public Forestry Administration and relevant rural organizations. Training to improve the servicing capacity of NGOs will also be needed.

The approximate cost over a 5-year period is calculated at around US\$ 40,000.

Project 18: Developing national policy on enforcement of environmental laws

Objective

- To study the root cause of lack of enforcement of laws in the coastal zone. Thereafter, to remedy the root causes in order to ensure enforcement.

Activities

- Conduct a study on the state of enforcement capabilities.
- Prepare the manpower requirement of the responsible agency (JDF Coast Guard, Marine Police, Game Wardens) that are responsible for enforcement.
- Prepare the time frame as well as budget for training of the manpower responsible for enforcement.
- Enforcement agencies to identify a system or individuals to which or to whom authority could be delegated for enforcement of legislation in remote or outlying areas.
- Prepare a database of offenders to monitor in future.
- Enforcement of law prohibiting illegal sand and sea stone quarrying
- Enforcement of ballast water management for vessels calling at ports of Jamaica
- Review enforcement measures for compliance with water quality standards
- Enforce the collection of user fees to target these back into the relevant protected area

- Enforce the implementation of taxes, levies and surcharges for certain permissible activities within protected areas
- Empowerment of relevant stakeholders to enforce existing legislation as appropriate
- Expansion of the current warden system
- Expand the program to continue environmental sensitization of judiciary, constabulary force, defense force and coastal communities.
- License, and monitor, all entities responsible for effluent discharge into the coastal zone.
- Define and enforce user density limits for parks and protected areas.

Duration/Timing

Immediate, throughout Phase I and Phase II

Overall Responsibility

NEPA, Council

Secondary Responsibility

NRCA, JDF Coast Guard, Marine Police, NGOs

Budget (5 Years)	US\$
Project Coordinator	filled by relocation
Environmental lawyer	-- as above --
Senior environmental officer	-- as above --
Miscellaneous	5000
Contingencies	500
TOTAL	5500

Project 19: Incorporating the Role of Science in the Decision Making Process

Objective

- To develop a strategic approach for integrated coastal zone management with specific utilization of science in an informed process of decision making.

Justification

The Council as the institution responsible for the coordination and implementation of the Plan will require greater capacity in order to mobilize resources, coordinate activities, facilitate integration and monitor progress. In order that the decisions made by the Council are based on scientific information, it is imperative that the role of science (marine and social sciences) be utilized.

Activities

- To initiate research early in the program to address the governance process itself and the factors and processes that regulate it.

- Institutionalize the role of marine and social sciences and Traditional Ecological Knowledge (TEK) in the decision making process.
- To ascertain scientific and quantifiable data on sources of marine pollution.

Duration/Timing

Immediate and through Phase I and Phase II

Overall Responsibility

Council

Secondary Responsibility

UWI, CMS, NEPA, NRCA, MLE, NGOs

Budget

No budget required

PROGRAM AREA 8: MONITORING, EVALUATION AND REPORTING ON THE ACTION PLAN

Project 20: Monitoring, Evaluation and Reporting of the Implementation of Program Areas

Objectives

- To identify and contract external independent evaluator(s) to evaluate the implementation of phase 1 of the Plan

Activities

- The major activities of the evaluator(s) will be to:
 - Develop guidelines, indicators and methodologies for evaluating the implementation of the plan, taking into consideration:
 - ❖ The goals and objectives of the plan
 - ❖ The targets set out in the plan
 - ❖ The objectives and timetables specified under each project
- Conduct an external review and analysis of data resulting from monitoring activities
- Apply indicators for monitoring and evaluation
- Prepare and submit evaluation report(s) to the Council
- Recommend how to use the findings to inform approaches to Phase 2 implementation and future planning.
- Audit the environmental practices of the tourism sector.

- Monitor introduction of exotic and/or invasive species.
- Monitor the expansion of ports to minimize environmental impacts.

Scope

The projects and processes being evaluated will be community based, and national in scope.

Timing/Duration

Evaluation will take place towards the end of first two years and will be spread over a period of three months.

Overall Responsibility

NEPA, Council

Secondary Responsibility

NRCA, JCF, JDF, AGD, DPP, CPC, Law Reform all the stakeholders in the plan.

Budget	US\$
Evaluator	9000
Air Travel	1000
Local Travel	500
Communication	1000
Miscellaneous	500
Contingency (10%)	1200
TOTAL	13200

Performance Indicators

- Recruitment and orientation of the evaluator

Means of Verification

- Guidelines, indicators, methodologies for evaluating implementation
- Evaluation reports

**PHASE II: CONSOLIDATION OF PHASE I AND INITIATION OF ADDITIONAL ASSISTANCE
(YEARS 3-5 OF THE PLAN)**

PROGRAM AREA 1: MOBILIZATION OF FINANCIAL AND TECHNICAL RESOURCES

Actions in this program area will involve the identification and accessing of new sources of finance and the continuation of existing support.

PROGRAM AREA 2: HUMAN RESOURCES AND INSTITUTIONAL CAPACITY BUILDING

Project 21: Strengthening of Agencies and Groups Involved in Integrated Coastal Area Management

Objectives/Activities

- To strengthen the capabilities of related agencies to plan and implement their sectoral coastal management priorities identified in their own sectoral plans
- To strengthen the capabilities of related agencies to assist in the implementation of projects identified in the Action Plan

Scope

National

Timing/Duration

Throughout Phase II

Overall Responsibility

Council

Secondary Responsibility

All the agencies involved in coastal zone management

Budget (3 Years)	US\$
Project coordinator	filled by relocation
Workshops (6)	6000
Miscellaneous	1000
Contingency (10%)	700
<u>TOTAL</u>	<u>7700</u>

Performance Indicators

By the end of year 1 of Phase II, the completion of:

- Two workshops
- Several task forces operational

Means of Verification

Progress report on each of the following:

- Workshops
- Task force implementation

Project 22: Strengthening Capacity of Community Organizations to Undertake Coastal Management Projects

Objectives

- To strengthen the capabilities of other institutions (especially communities) to plan and implement their coastal management priorities identified in their own plans
- To strengthen their capabilities to assist in the implementation of projects identified in the Action Plan

Activities

- To develop Community Based Organizations (CBO)
- To create strategic alliances between CBOs and Council/NEPA.
- Convene workshops for the purpose of education, orientation, implementation and sharing of knowledge with CBOs

Scope

Community based

Timing/Duration

Throughout Phase II

Overall Responsibility

Council

Secondary Responsibility

NGOs

Budget (3 Years)

US\$

Project coordinator	filled by relocation
Demonstration project leader	-- as above --
Workshops (6)	6000
Pilot project	5000
Miscellaneous	1000
Contingencies (10%)	1200
TOTAL	13200

Performance Indicators

By the end of year 1 of Phase II, the completion of:

- Two workshops
- Pilot project

Means of Verification

Progress report on each of the following:

- Workshops
- Demonstration project

PROGRAM AREA 3: RESEARCH AND INFORMATION ON INTEGRATED COASTAL ZONE MANAGEMENT

Project 23: Pilot Study on Economic Valuation of Jamaica's Coastal Resources

Objectives

- To determine the economic value of a coastal ecosystem in Jamaica by method of total economic valuation
- To use the study as a pilot/demonstration project for further coastal resources valuation exercises in Jamaica

Activities

- Conduct an economic valuation of the coastal ecosystem of Jamaica.
- Provide training and develop experience in Jamaican specialists in relevant disciplines for conducting similar studies in the future

Scope

The project will apply to the chosen coastal ecosystem. If successful, its relevance and application are expected to become national in scope.

Timing/Duration

Data collection and inventory for the project will be conducted over a period of one year. The total duration of the project will be up to two years.

Overall Responsibility

Council, NEPA

Secondary Responsibility

UWI, UTech

Budget (2 years)	US\$
Valuation team	50000
Resource inventory	25000
Interviews, literature research	7500
Contingency (10%)	8250
<u>TOTAL</u>	<u>90750</u>

Performance Indicators

- Pilot site and terms of reference defined
- Multidisciplinary team selected
- Components, functions and attributes of the coastal ecosystem identified
- Data collected from inventory, interviews and literature research
- Data analyzed and values quantified

Means of Verification

- Contract for study
- Quarterly reports of the team
- Inventory and assessment report
- Final report of the study

PROGRAM AREA 4: MONITORING, EVALUATION AND REPORTING OF THE IMPLEMENTATION OF PROGRAM AREAS 1 TO 3 ABOVE

Project 24: Evaluation of Implementation of the Initial Cycle of the National Action Plan on Integrated Coastal Zone Management

Objectives

- To monitor the progress of the Action Plan.

Activities

- Identify and contract independent evaluator (s) to evaluate the implementation of the first cycle of the plan

Scope

The evaluation will cover the entire first cycle of the plan

Timing/Duration

Evaluation will take place towards the end of the first five years

Overall Responsibility

NEPA, Council

Secondary Responsibility

All the stakeholders of the plan

Budget	US\$
Evaluator	9000
Air travel	1000
Local travel	500
Communication	1000
Miscellaneous	500
Contingencies (10%)	1200
TOTAL	13200

Performance Indicators

- Recruitment and orientation of evaluator(s)

Means of Verification

- Guidelines, indicators and methodologies for evaluating implementation
- Evaluation reports

PROGRAM AREA 5: PLANNING INTEGRATED COASTAL ZONE MANAGEMENT ACTION PLAN CYCLE TWO

This program area will involve the initiation of planning for the second cycle of the plan for the next five years.

Title:	Establishment of 'Ocean and Coastal Research Institute of Jamaica'
Duration:	Three years
Project Site:	Jamaica
UNDP Sector:	Agriculture, Forestry and Fisheries
Sub-sector: Government	Policies, Planning and Legislation
Implementing Agency:	Council on Ocean and Coastal Zone Management
Executing Agency:	UNDP
National Cooperating Agency:	Natural Resources Conservation Authority (NRCA)
Estimated Starting Date:	March 2002/2003
External (GEF) Inputs:	
Brief Description:	

The project is designed to:

- Establish a reliable research and data collection institute in Jamaica to continuously study the scale of the impact of land-based activities on the coastal environment and, to continuously monitor the sources and levels of marine pollution;
- Acquire a research vessel to conduct marine environmental research;
- Foster sustainable use of coastal resources by providing a platform for coordinating socio-economic as well as, marine scientific research.

A CONTEXT

Description of Sub-Sector

Many of the world's major cities are located in coastal areas, and a large portion of economic activities, with the exception of agriculture, are concentrated in these cities. The coastal zone in Jamaica is an area of convergence of activities in urban centers, such as shipping in major ports, and wastes generated from domestic sources and by industrial facilities. Thus, traditional resource-based activities, such as coastal fisheries, forestry and agriculture, are found side by side with activities such as industry, shipping and tourism.

The potential for economic opportunities in coastal cities of Jamaica is a strong attractive force, fuelling migration, often from economically depressed rural areas. As a result, in future much larger, younger population can be expected in the coastal areas of Jamaica. These future coastal residents will demand employment, housing, energy, food, water and other goods and services, thus presenting a substantial development challenge.

Jamaica's population at the end of 1996 numbered 2,527,600. Approximately 65% of the total population lived within 5 km of the coast. The average household size in 1994/95 was 3.8. Women headed approximately 44% of households³.

Against this demographic backdrop, coastal areas in Jamaica are extremely important for the social and economic welfare of current and future generations, as coastal resources support key economic and subsistence activities. The economy of Jamaica is currently very dependent on natural resources, for agriculture (employs 36% of the population), fisheries (the 1996 finfish catch was estimated to be about 14500 metric tons) and forestry (an estimated 41% of households in Jamaica use charcoal as a regular means of fuel for home cooking) sub-sectors, coastal tourism and maritime transport.

Although, in the future, coastal areas in Jamaica will become more urbanised and the economy is likely to diversify through industrialisation, dependence on coastal resources is likely to remain strong. The diversified economic activities will often be dependent on coastal resources. As economic diversification increases and makes the sectors more interdependent, conflicts over natural resources and coastal environment will tend to develop further.

The government of Jamaica established the Council on Ocean and Coastal Zone Management in 1998, based on Cabinet Decision No. 220/703/200. The Council identified the need for a rational, harmonized national policy on ocean and coastal resource management. Responsibilities of the Council also include establishing a Center/Institute (hereinafter referred to as the Institute) in ocean and coastal research and training.

The Institute, it is envisaged, will be dedicated to gathering knowledge and technology needed to enable people/agencies to carry out research that will facilitate sustainable management of ocean and coastal resources. The goal, on one hand, is to constantly monitor the health of the coastal ecosystem. On the other, it is to study the impact of social activities that are detrimental to the coastal zone. The approach will enable planners to suggest economically and socially feasible mitigation options that will improve the well being of present and future generations of coastal communities, particularly those with low incomes. The Institute will disseminate coastal resource management information of short- and long-term environmental, social and economic benefit, which will also help to enhance the coastal management perspective.

The Institute will derive inputs from a few agencies prior to its complete inception at the end of the project. Center for Marine Sciences (CMS) has been involved in marine scientific research at its research center at the University of West Indies, Mona campus, Kingston. CMS has a comparative advantage in marine scientific research in Jamaica. During its existence, CMS has established scientific credentials on almost all aspects of marine science, but specifically on coral reefs. The CMS however, is not geared to conduct research in socio-economic aspects of coastal management issues.

The Council has identified four important concerns in its recent strategic analysis: sustainability, enhancement of research capability, equity, and innovative approach in dealing with problems of Integrated Coastal Management. Its new program structure and work plan, that is being developed in consultation with marine scientists, policy planners, consultants and development-oriented non-governmental organisations (NGOs), reflects these concerns.

³ Jamaica, State of the Environment – The 1997 Report (Natural Resources Conservation Authority)

Knowledge gained in ocean and coastal research will enable planners to critically evaluate trade-off between sub-sectors and among development alternatives.

B. PROJECT JUSTIFICATION

1. Outreach Problem to be Addressed and the Present Situation

The proposed project addresses the problem of the growing need for research in the field of ocean and coastal management in order to enable the Council to embark on the integrated management of Jamaica's ocean and coastal resources that can be used as the basis for policy decisions in the future. For instance, research is needed on effective waste water systems and alternative forms of sanitation since, only limited number of households are located in areas served by central collection and treatment systems.

Present situation:

- Fish catches are being reduced by over exploitation – socioeconomic issue;
- Coastal mangroves, wetlands and seagrass beds which provide breeding, feeding and nursery grounds for fish and shrimp are being destroyed – socioeconomic issue;
- The monitoring of Kingston harbor has revealed that one of the major sources of pollution is the effluent discharged directly into the harbor as sewage – marine scientific issue;
- A warmer global climate is expected to result in a rise of sea level, as well as changes in weather patterns. The frequency of hurricanes and tropical storms could change protective coral reefs, and flooding of low-lying coastal communities – marine scientific issue;
- Topsoil from farms and forests around the country are lost at the rate of 80 million tons per year – socioeconomic, as well as marine scientific issue.

Since 1998, progress is being made in developing broadly adapted management plans for the ocean and coastal zone. Since the coastal zone of Jamaica is very vulnerable to socio-economic pressures, integrated management is a challenge, but one that would need time. Therefore, it is essential that management of ocean and coastal resource be supplemented with overall research in the area to form the basis for scientifically sound decision-making.

With the government's support, an inventory of marine and coastal resources and conditions has been underway since 1995, is expected to provide baseline information for coastal zone management and development decisions. A coastal zone resource atlas, as well as a working computerized Geographic Information System database, was completed in 1997. Since environmental conditions in Jamaica represent an important part of the spectrum of coastal ecosystems in the Caribbean, additional activities need to be established in national research systems to represent a wider range of coastal ecosystems and sub-ecosystems.

The Institute's outreach is designed to share knowledge and strengthen the work of the Council. The Institute's programs will equip it to:

- Act as a nodal point using interdisciplinary approach, and disseminate Jamaica's data on coastal research. This to include both, the area of marine science as well as the socio-economic aspects of ocean and coastal management;
- Organize conferences to facilitate the exchange of knowledge and direct its application to resolve emerging problems;

- Extend technical services to strengthen the capacity of different NGOs to conduct coastal issues research.

Various alternatives have been proposed for mitigating the coastal resource degradation. These include *inter alia*, substantial additional work, especially process-oriented research, required to identify the most socio-economically feasible mitigation options that maintain or enhance sustainable coastal productivity. The problem of increased pressure on Jamaica's coastal ecosystem, and lack of awareness, resources and expertise, has resulted in insufficient research on all the matters associated with ocean and coastal management i.e. fisheries, coastal ecosystem, mitigation of non-point source of pollution and sea-bed mining.

The concerns that drive the development of this research program are delicate, with causes and effects that transcend future generations and which require international cooperation. Reducing the threat to Jamaica's coastal environment requires concerned response strategies involving both groups, scientific as well as socio-economic, in the design and execution of research that should be the basis for recommended policy actions. The human, technical, and financial resources needed to successfully implement the essential research program, and necessary mitigation technologies, cannot therefore be met without the involvement of international donor agencies.

2. Expected End-of-Project Situation

The end of this project expects the following results:

- National programs in ocean and coastal management in Jamaica will have established reliable data on issues related to ocean and coastal zone management and, protection of biodiversity in the coastal environment of Jamaica;
- National programs will have explored the effects of current agricultural cultivation practices that contribute towards non-point source of pollution and will have tested mitigation strategies;
- A minimum set of environmental parameters will allow extrapolation and prediction of the effect of agriculture on coastal environment, mitigate the threat from coastal communities;
- Explore the seabed for mining of silicates and polymetallic nodules and sand for construction purposes;
- The Council and national programs will have increased the awareness of decision makers, resource managers, extension services, farmers, fishers, on the causes, extent and mitigation options concerning the threat to Jamaica's ocean and coastal environment. It is intended that this awareness will lead to concerted response strategies.
- Increased coordination in the field of research related to Jamaica's coastal zone to prevent duplication of effort.

3. Project Strategy

The project is divided into four major components:

- Development of the research Institute. This includes the acquisition of the research vessel.
- Standardisation of equipment and methodology
- Development of a cadre of experts.

- Quantification of damage done to the coastal environment of Jamaica and diagnosis of mitigation options.
- Evaluation of processes that control the threat to the coastal environment (socioeconomic as well as marine scientific).

The Council will focus on methodology development, while the Institute will focus on baseline research, measurement of damage of coastal environment in monetary terms, training, and the verification of promising mitigation alternatives.

The direct recipients of the proposed project will be the Council that is involved in ocean and coastal management. The Council being responsible for coastal improvement in Jamaica is in turn responsible to target beneficiaries (fishers and farmers). The project will be coordinated and implemented by the Council in collaboration with the participating members, advanced institutions like the CMS, and international research programs.

4. Target Beneficiaries

Coastal communities of Jamaica, and specifically the fishers, will benefit by the development of the Institute. The result of research will enable the development of training programs at grass root level to make people aware of the unsustainable practices. The mitigation options will be brought to the coastal communities.

The acquisition of the research vessel will help:

- A continuous monitoring of the level of nutrients and the water quality around the coast of Jamaica;
- Monitor the condition of coral reefs on a regular basis;
- A continuous monitoring of fish stocks;
- The exploration of polymetallic nodules and sand for construction purposes;
- Marine archaeological research;
- Hydrographic and oceanographic research.

The national program of managing the ocean and coastal resources in a sustainable way will also be the immediate beneficiary.

5. Reasons for Assistance

The project is based on a three-year work plan (2001-2003). Center for Marine Sciences (CMS) has been involved in marine scientific research at its research center at the University of West Indies, Mona campus, Kingston. However, on a regular basis the research at the CMS is focused on the damage to the coral reefs which, is one of the issues in the sound management of ocean and coastal resources. The Institute that is planned, along with the research vessel, will undertake research in all the facets of ocean and coastal management issues, be it marine scientific or socio-economic. The domestic costs involved in the endeavor will be greater than the domestic benefits derived. Funds are therefore necessary to enhance Jamaica's capabilities to establish the capacity for research to effectively explore mitigation options.

6. Sustainability of Project

The institute will be able to sustain itself in future by conducting coastal management research for Mines Division, Fisheries Division, Forestry Department, Department of Agriculture and the Survey Department. This will be based on:

- Involvement of the stakeholders in coastal management – including NGOs, community groups, and local scientific and technical resources – in designing and implementing in-country priorities and programs.
- Maximizing of the institute’s ability to take account and respond to local needs, including research in development problems that adversely affect the coastal zone or contribute to coastal pollution
- Recognition of the special environmental roles played by women and indigenous people

The sustainability of the research vessel will be maintained by:

- Marine archaeological research
- Hydrographic and oceanographic research

Coordination Arrangements

C. DEVELOPMENT OBJECTIVE

To establish, in collaboration with national programs, reliable data about the scale, and control mechanisms in respect of sources of pollution of the ocean and coastal environment of Jamaica, and to foster sustainable management of ocean and coastal resources by suggesting mitigating mechanisms that are technically and socio-economically feasible.

D. IMMEDIATE OBJECTIVES, OUTPUTS AND ACTIVITIES

Objective 1

Establishment of an Ocean and Coastal Research Institute.

Output 1.1

Selection of a site to locate the research institute. This will include the specification for the laboratory to conduct marine scientific research.

Activities for Output 1.1

- 1.1.1 View probable sites for taking on lease.
- 1.1.2 Define the micro-localisation of the institute. Survey the main characteristics of the selected site, including terrain and the proximity to the coast.
- 1.1.3 Prepare technical specifications for the marine laboratory.
- 1.1.4 Develop the final conceptual design of the institute.

Output 1.2

Development of infrastructure for the research institute.

Activities for Output 1.2

- 1.2.1 Select suppliers/contractors capable of providing the required process services.
- 1.2.2 Contract the required process engineering services.
- 1.2.3 Define the main operational parameters of the institute.
- 1.2.4 Define the basic specification for the equipment in the laboratory.
- 1.2.5 Monitor the process of development of the institute.

Objective 2

Equip the institute with trained staff.

Output 2.1

Employ the relevant staff. A Director will head the Institute. There will be two Deputy Directors, one each for the marine sciences division and one for the socioeconomic division. One project manager and two field officers will assist each Deputy Director. The socioeconomic division will also consist of one rural specialist. There will also be a librarian/data specialist, two drivers and one secretary. Employing a short-term consultant (national/international) will be an option that will be used at the discretion of the director. There will be a local NGO Cell as part of the Institute. The total staff will therefore comprise of 15 people.

Activity to Achieve Output 2.1

- 2.1.1 Define the minimum parameters for employment to each post stated in the output. The following qualifications are required or strongly desired:
 - Post-graduate education in a relevant field;
 - Professional or academic experience in substantive fields, such as marine environmental policy, conservation of biodiversity, marine environmental management and rural development;
 - Understanding of, and significant experience with the implementation of small grant activities, especially programs to support NGO and community based environment and development projects in developing countries;
 - Computer skills, including word processing, spread sheets and databases.

Objective 3

To acquire a research vessel to conduct surveys and researches in the ocean and coastal zone of Jamaica.

Output 3.1

Availability of and access to a research vessel for utilisation by Jamaica to conduct marine scientific research in accordance with program needs for the protection of the marine environment.

Activities for Output 3.1

- 3.1.1 Prepare preliminary financial analysis based on the proposed conceptual requirement for such a vessel and the estimated running costs.
- 3.1.2 Locate a second-hand research vessel in the shipping market.
- 3.1.3 Define a preliminary financing plan.
- 3.1.4 Formulate a purchase proposal.

Objective 4

Develop and standardise measurement systems that:

- Are suitable for reliable measurement of marine scientific as well as socioeconomic indicators that can be operated by scientific support staff (marine and social scientists)

Standardised measurement systems will facilitate the pooling, analysis, comparison and access to measurement data from the different sites and communities. Standardised measurement systems will also make for efficient logistics and training for operations and maintenance.

Output 4.1

Standardised measurement systems for agriculture, fisheries, mangrove forest sub-sectors, watershed ecosystems and, for the socioeconomic indicators for its impact on the coastal environment.

Activities for Output 4.1

- 4.1.1 Design measurement systems.
- 4.1.2 Install and test measurement systems at experimental sites and coastal communities.
- 4.1.3 Plan and review experiments annually, including field visits to measurement sites.

Objective 5

Upgrade strength of participating team in measurement and analysis of techniques of essential water measurements and socioeconomic indicators.

Output 5.1

Develop a cadre of experts to implement the proposed experiments at selected key sites of national coastal management programs.

Activities to Achieve Output 5.1

- 5.1.1 Training of marine as well as socioeconomic scientists in essential measurements, and in the analysis of the data.
- 5.1.2 Arrange for on-the-job training in operation and maintenance of the measurement system, and in the analysis of data so obtained.
- 5.1.3 Annual training and planning workshops, including visits to experimental sites.

Objective 6

Strengthen the capacity of local groups to address problems affecting the coastal environment.

Output 6.1

Strengthen the capacity of NGOs, community groups and local scientific and technical resources to address the coastal environmental problems.

Activities for Output 6.1

- 6.1.1 Support the inclusion of training components in national ocean and coastal environmental projects.
- 6.1.2 Support independent training activities where warranted.
- 6.1.3 Promote exchanges and networking among local NGOs, and between NGOs and the local scientific and technical community.

Objective 7

The strengthening of the Institute through exchange of visits and consultation.

Output 7.1

Arrange for annual audits.

Activity for Output 7.1

- 7.1.1 Invite project team and other scientists to visit the sites annually in order to interact with local communities involved in location-specific planning, conduct inspection of experiments, and consultation with decision makers – the Council.
- 7.1.2 Determine the effects of current and advanced research. This will provide more reliable estimates and will help to identify the most promising mitigation options.

E. INPUTS

National inputs include administrative and logistic support for the establishment of the institute and acquiring the research vessel.

External funding (GEF/Bilateral)

External sources will provide US\$.....to support the program (figure included after discussion on the proposed budget). Budget allocation for three years beginning in 2001 is attached.

F. RISKS

The recruitment of committed, professional staff will be essential to effective project implementation. There is also some risk that, because of the relatively large size of the project, participating offices may not provide adequate initial support thus resulting in a time lag.

Another major challenge relates to the establishment of effective evaluation mechanisms and procedures. If these are not in place early on, supported effectively and monitored continuously, the project will fail in its essential mission of showing the kinds of activities and strategies that have the potential for making an important difference in the future.

G. PROJECT REVIEW, REPORTING AND EVALUATION

The project will be subject to a joint review by representative(s) of the Council and the executing agency at least once every twelve months. The first meeting will be held within the first twelve months of the start of full implementation. The executing agency shall provide for the independent assessment of this project through the services of an independent assessor who shall be engaged for a period of two work-months. Such assessments shall be carried out halfway through the project and at its conclusion.

H. LEGAL ASPECTS

It is envisaged that the Institute will not be a research body under the University of West Indies or, a government body. The Institute will be an autonomous body whose legal status will be located between the UWI and the Government of Jamaica. Secondly, the Institute will own the research vessel. The operation of the vessel will be the responsibility of Jamaica Defense Force Coast Guard. A Memorandum of Understanding is therefore, to be signed between the Government of Jamaica and the University of West Indies, delineating the legal status of the Institute.

I. Budget

The budget for the project is attached as Annex I.

COUNTRY: Jamaica

SHADOW BUDGET

PROJECT TITLE: Establishment of 'Ocean and Coastal Research Institute of Jamaica'

Project Component	Total Amount US Dollars	2001 Amount US Dollars	2002 Amount US Dollars	2003 Amount US Dollars
010 – Office Accommodation				
010-1 Office – head quarter		10,000	10,000	10,000
010-2 Office - field (optional)				
COMPONENT TOTAL	30,000	10,000	10,000	10,000
020 – Project Personnel				
020-1 Senior Staff - 5		120,000	120,000	120,000
020-2 Junior staff – 6		76,800	76,800	76,800
020-3 NGO representation				
020-3 Consultant (optional)				
Sub Total	590,400	196,800	196,800	196,800
Administration support persons				
020-4 Secretary – 1		8,400	8,400	8,400
020-5 Drivers – 2		14,400	14,400	14,400
Sub total 'COMPONENT TOTAL	68,400	22,800	22,800	22,800

Towards Ocean and Coastal Zone Management in Jamaica – Proposed Action Plan (First Five Years)

Project Component	Total Amount US Dollars	2001 Amount US Dollars	2002 Amount US Dollars	2003 Amount US Dollars
030 – Official travel				
030-1 In-country travel		1,000	1,500	1,500
COMPONENT TOTAL	4,000	1,000	1,500	1,500
040 – Equipment (office)				
040-1 Expendable		10,000	2,500	2,500
040-2 Vehicles (2)		35,000	--	--
040-3 Office equipment		5,000	--	--
040-4 Test equipment		--	130,000	130,000
040-5 Communications/year	365,000	15,000	15,000	15,000
COMPONENT TOTAL		65,000	150,000	150,000
050 – Equipment (mobile)				
050-1 Research vessel		--	1,500,000	--
050-2 Operating costs		--	435,200	435,200
COMPONENT TOTAL	2,370,400	--	1,935,200	435,200
060 – Training				
060-1 Study tours		--	12,000	12,000
060-2 In-country training		--	50,000	50,000
COMPONENT TOTAL	124,000	--	62,000	62,000

Project Component	Total Amount US Dollars	2001 Amount US Dollars	2002 Amount US Dollars	2003 Amount US Dollars
070 – Audit				
070-1 Reporting		5,000	5,000	5,000
070-2 Agency support costs		2,000	2,000	2,000
COMPONENT TOTAL	21,000	7,000	7,000	7,000
080 – Miscellaneous				
080-1 Contingencies (10%)	357,320	--	--	--
COMPONENT TOTAL	357,320	--	--	--
BUDGET TOTAL	3,930,520	302,600	2,385,300	885,300
UNDP TOTAL				

Test Equipment

Field and laboratory work @ US\$ 7,500/site/year (15 SITES)	US\$ 112,500
Instrumentation	US\$ 9,000
Part time data analysis	US\$ 8,500

TOTAL **US\$ 130,000**

Project Personnel

1 Director; US\$ 3000/month	US\$ 36,000
2 Deputy Directors; US\$ 2000/month	US\$ 48,000
2 Project Managers; US\$ 1500/month	US\$ 36,000
1 Rural Specialist; US\$ 1500/month	US\$ 18,000
4 Field Officers; US\$ 1000/month	US\$ 48,000
1 Librarian/Data Specialist; US\$ 900/month	US\$ 10,800
1 Secretary; US\$ 700/month	US\$ 8,400
2 Drivers; US\$ 600/month	US\$ 14,400

TOTAL **US\$ 219,600**

Operating costs of the research vessel

Salary

Master and Chief Engineer @ US\$ 1500/month for 6 months	US\$ 18,000
Mate and 1 st Asst. engineer @ US\$ 1200/month for 6 months	US\$ 14,400
2 nd Mate and 2 nd Asst. Engineer @ US\$ 1000/month for 6 months	US\$ 12,000
Electrician @ US\$ 900/month for 6 months	US\$ 5,400
Cook @ US\$ 700/month for 6 months	US\$ 4,200
4 seamen @ US\$ 600/month for 6 months	US\$ 14,400

TOTAL for 12 people **US\$ 68,400**

Food for 12 people @ US\$ 20/day/person for 6 months	US\$ 43,200
Fuel; 10Ts/day @ US\$ 130/Tn.	US\$ 234,000
Disel oil; 2Ts/day @ US\$ 300/Tn	US\$ 108,000
Maintenance and insurance/year	US\$ 50,000

TOTAL **US\$ 435,200**

GRAND TOTAL OPERATING COSTS **US\$ 654,800**

REFERENCES (BACKGROUND DOCUMENTS)

Anonymous, 1997, *Environment and Natural Resources in Coastal Areas of Developing Countries*, The SIDA Marine and Coastal Zone Initiative.

Asia Pacific Economic Cooperation (APEC), 1997, *APEC Action Plan for Sustainability of the Marine Environment*.

California Coastal Commission, 1997, *Strategic Plan*.

Draft Discussion Document for the Fisheries Management Plan to Improve the Process of Allocating Fishing Rights, South Africa, 2000.

Egero, Bertil, 1997, *Review of Population-Related Dimensions in Coastal Area Development and Environmental Management*. The SIDA Marine and Coastal Zone Initiative.

Food and Agriculture Organization (FAO) of the United Nations, 1997, *FAO Technical Guidelines for Responsible Fisheries*.

Food and Agriculture Organization (FAO) of the United Nations, 1985, *Tropical Forestry Action Plan*.

<http://www.noaa.gov/strg-plan/shc.htm>, No date, *Sustain Healthy Coasts*.

Johansson, Lars, 1997, *Coastal Management – Coastal Sector Coordination and Integrated Coastal Area Planning*, The SIDA Marine and Coastal Zone Initiative.

Lindquist, Armin, 1997, *Fisheries, Aquaculture and Coastal Zones in Developing Countries*, The SIDA Marine and Coastal Zone Initiative.

Mani, J. S, 1997, *Report: Coastal Zone Management Plans and Policies in India*.

National Environment & Planning Agency/ Natural Resources Conservation Authority, 2000, *Towards a National Policy & Strategy on Environmental Management Systems*.

Natural Resources Conservation Authority/The University of Uppsala, Sweden. 1997, *Manual for Integrated Coastal Planning and Management in Jamaica*.

Natural Resources Conservation Authority, *Guidelines for Planning, Construction and Maintenance Facilities for Enhancement and Protection of Shorelines*, No date.

Natural Resources Conservation Authority, 1997/8, *Handbook for Development in the Coastal Zone of Jamaica*.

Natural Resources Conservation Authority, 1999-2000, *Jamaica National Environmental Action Plan*.

Natural Resources Conservation Authority, 1995, *Jamaica's Coastal Resources: A Reconnaissance Report*.

Natural Resources Conservation Authority, 1995, *Overview of Marine Pollution in Jamaica*.

Pernetta, John, 1995, *Atlas of the Oceans*, pp. 94-115.

Primer on Coastal Resource Management, 1999, CRMP Document No. 06-CRM/1999, Philippines.

Sinha, S, 1997, *Economics of Environmental Damage in Coastal Development*, Masters thesis presented at the World Maritime University, Malmö, Sweden.

Socio-economic Benefits of Integrated Coastal Zone Management, An International Symposium, Book of Abstracts, 1996.

Torrel, Elin, 1997, *Conflicts Regarding Natural Resources Utilization in Coastal Zones of Developing Countries*, The SIDA Marine and Coastal Zone Initiative.

United Nations Environment Program (UNEP), Regional Seas Report and Studies No. 61, 1985, *Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the East African Region*.

UNESCO 2000, *Pan-African Conference on Sustainable Coastal Management; Proceedings of the Workshop: An Integrated Approach, (PACSICOM), Maputo, Mozambique, 1998*.

wysiwyg://54/http://www.blackseaweb.net/action/content.htm, No date, *Strategic Action Plan for the Rehabilitation and Protection of the Black Sea*.