CARIBBEAN REGIONAL TRAINING MANUAL

ENVIRONMENTALLY SOUND TOURIST FACILITY DESIGN AND DEVELOPMENT FOR THE TOURISM INDUSTRY

UNEP

Supported by:

USAID

Organized by:

CAST
CARIBBEAN ALLIANCE FOR SUSTAINABLE TOURISM

JANUARY 1999

The compilation and editing of this Manual was commissioned by UNEP, United Environment Porgramme from Eleanor B. Jones of Environmental Solutions Ltd., Kingston Jamaica, under the USAID/UNEP Caribbean Environmental Network (CEN) Project (CR/FP/0401 94 15[CP/0401 94 47]).

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For bibliography purposes document may be cited as:
UNEP/USAID/CAST: Caribbean Regional Training Manual on **ENVIRONMENTALLY SOUND TOURIST FACILITY DESIGN AND DEVELOPMENT**
UNEP/Caribbean Environment Programme, Kingston. 1999. 130 pages

EXECUTIVE SUMMARY

Environmentally Sound Tourist Facility Design and Development is presented as an educational and instructional Manual to assist in the training of environmentalists and development planners and to fill gaps in knowledge related to environmental aspects of tourism activities.

The Modules which have been developed for this Manual are centered around specific themes including the environmental impacts of tourism facility design, the essential resources of coastal environmental systems, local and regional coastal regulatory systems, sustainable project planning, sustainable infrastructure and development masterplan, building designs and an outline of operational maintenance and monitoring systems.

It has been recognised that "greener tourism" within the Wider Caribbean region cannot happen without fundamental changes in the process of project/facility design and development. The conventional processes have produced a current stock of tourism developments which are not sustainable. A new proposed Central Development Process is being advocated which is more holistic in approach and more environmentally focused. This new process offers a framework for the entire development process, from project pre-planning and site selection through facility post-occupancy.

The natural resources of the region must be taken into account when designing for tourism. This extends beyond recognition of the natural systems to include resource management, environmental economics and general development planning. Resources are generally categorised as "stock resources" and "flow resources". Stock resources are developed over time and provide raw materials for general use, while flow resources are renewable resources as they are regenerated over a relatively short time span. Sustainable systems design demands a balance between the two sets of resources.

Inappropriate design and siting of tourism facilities impacts negatively on the environment. Natural events often reek havoc on the environment, but man-made designs can determine the level of impact of these natural phenomena on the environment. Poorly designed facilities are at greater risk to devastation. In the event of disasters, critical facilities that are likely to suffer include high-density facilities, transportation nodes, utility services and industrial, agricultural and social infrastructures.

Sustainable planning is, therefore, a critical issue in the siting of tourism facilities. This involves ecologically-based strategies which are environmentally, culturally and economically-sound. All stakeholders including the public sector must begin by formulating and reviewing potential sites before final selection for development. Environmental Impact Assessments and Carrying Capacity Instruments are tools which can assist in this process.

Sustainable systems such as wastewater treatment and renewable energy systems must be considered, where possible. Factors to be considered include appropriate technology, environmental standards, best practice scenarios, operation, and maintenance and monitoring.

The new sustainable process incorporates guidelines for low-impact tourist facility design and development. It offers a step-by-step design process that departs from the traditional design processes. It is an integrated team design approach that incorporates the goals of sustainability as outlined in Agenda 21 and other blueprints, as well as the hallmarks of environmental stewardship.

FOREWORD

In 1983, the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, the Cartagena Convention, was adopted and serves as the legal framework for the Caribbean Environment Programme. It is the only comprehensive environmental umbrella treaty for the region. Two Protocols have been adopted on specific aspects of environmental management: the Protocol Concerning Cooperation in Combatting Oil Spills and the Protocol Concerning Specially Protected Areas and Wildlife. A third Protocol Concerning Land-based Sources of Marine Pollution is under development.

The Regional Programme for Specially Protected Areas and Wildlife in the Wider Caribbean Region (SPAW) was designed to implement the provisions and requirements of the SPAW Protocol. In keeping with the objectives and spirit of the SPAW Programme, the Caribbean Environment Programme (CEP) embarked on a new but integral component of the Programme - the Caribbean Environment Network (CEN) Project - aimed at improving environmental quality and the conservation of natural resources of the coastal and marine environment.

The CEN Project focused on reducing environmental impacts by tourism, given the importance and scope of the industry in the Wider Caribbean and its close linkages with various marine and coastal habitats in the region. It was designed in response to the Regional Agenda for Action of the International Coral Reef Initiative (ICRI), with the input of relevant partners in the region. This Project was a joint venture with the United States Agency for International Development (USAID) in Jamaica as the main donor agency with the support of a Technical Consultative Committee established with key agencies in the region including: British Development Division (BDD/ODA), Caribbean Tourism Organization (CTO), Caribbean Development Bank (CDB), French Cooperation Division, Inter-American Development Bank (IDB), Pan-American Health Organization (PAHO), University of the West Indies- Centre for Marine Sciences, United Nations Development Programme (UNDP) and the World Bank.

This Manual is one in a series of three products emanating from the CEN Training Programme. They were developed and implemented to fill gaps in knowledge related to environmental aspects of tourism and the marine environment in three major areas: Solid and Wastewater Management; Design and Siting of Tourism Facilities; and Integrated Coastal Area Management .

The above areas addressed by the Training Programme evolved mainly from a Training Needs Assessment commissioned by UNEP from the Consortium of Caribbean Universities for Natural Resource Management (CCUNRM), and a report prepared by the Panos Institute on Improving Training and Public Awareness on Caribbean Coastal Tourism. The Training Needs Assessment exercise had inputs from a Consultation Meeting organised by CCUNRM (Puerto Rico, 22-23 October 1996) and a survey through questionnaires sent to a wide variety of stakeholders in the region based on a set of criteria including experiences in education, tourism and marine environment issues. Care was taken to include a diversity of Caribbean countries in terms of size, language and tourism activities.

The overall objective of the Training Programme was to assist in the development of institutional capacity in the region on coastal resources and ecosystem management related to the tourism industry. Seven courses in English and Spanish were delivered under the CEN Project with over 100 participants from the Dutch, English, French and Spanish Speaking Caribbean, representing 28 countries (including territories and dependencies) in the region. Participants also represented a cross-section of public, private and academic institutions involved in different aspects of tourism and coastal environment issues, such as developers, hotel managers, coastal area planners and managers, technical staff from Governments and water conservation authorities.

Materials from the Training Courses have been compiled and consolidated to produce this series of Training Manuals, which it is hoped will serve as reference materials for wide dissemination and assist in promoting replicability of the training experience throughout the Wider Caribbean.

A number of other regional and international organisations have embarked on programmes to improve environmental practices towards achieving sustainable tourism in the region. It was the goal of the USAID/UNEP CEN Project to contribute to these efforts in support of sustainable use and conservation of coastal zones and resources in the Wider Caribbean region.

ACKNOWLEDGEMENTS

Many persons have shared experiences, ideas and information which have contributed to this Manual. In particular, appreciation is expressed for the technical inputs made by:

- Mr. Kamau Akili, Environment Tobago, Trinidad and Tobago
- Ms. Denise Forrest, Environmental Solutions Limited, Kingston, Jamaica
- Mr. Lloyd Gardner, ECOTECH Inc., Kingston, Jamaica
- Mr. Mark Gruin, Greenpoint Limited, Hershey, PA, USA
- Dr. Oliver Headley, the University of the West Indies, Bridgetown, Barbados
- Mr. Onaje Jackson, Caribbean InfraTech, St. Croix, US Virgin Islands
- Dr. José Lopez, University of Puerto Rico, Humacao, Puerto Rico
- Ms. Lilia Medina, Town and Country Planning, City of Miami, FL, USA
- Dr. Alida Ortiz, University of Puerto Rico, Humacao, Puerto Rico
- Dr. LaVerne Ragster, University of US Virgin Islands, St. Croix, US Virgin Islands

THE MANUAL

OBJECTIVES:

This Training Manual is being presented as a practical instructional tool to assist in human resource strengthening for the development of tourism which is environmentally sustainable in the Wider Caribbean Region. It introduces the concept and presents a new framework for project development based on sustainable infrastructure and practices for the Design and Siting of Tourism Facilities and their value to the tourism industry. Although the Manual is not intended to serve as a textbook for the tourism industry or as final authoritative guidelines, it provides overall principles based on the current state of knowledge for the sustainable design and siting of tourism facilities.

TARGET AUDIENCE:

This Manual was produced as an introduction to the design and siting of tourism facilities for all of those who are actively involved or interested in the planning, development and construction processes of facilities, and their environmental dimension, within the tourism sector and the environmental community alike. These include hotel and tourism facility developers, tourism development companies, coastal managers and town planning staff, architects and engineers, as well as other stakeholders from local community associations and policy decision-makers.

Many issues addressed by the Manual are also of relevance to students and teachers in tourism at engineering, architectural and environmental schools and universities.

CONTENTS AND USE:

Seven Modules have been developed to introduce general background topics in early modules, which will contribute to a proper understanding of subsequent modules. These modules are geared towards reducing the potential environmental impacts of the tourism industry on coastal and marine resources in the Wider Caribbean Region and can be summarised as follows:

Module 1:	Examines the environmental impact of tourism facility design, and provides images of high and low impact tourism facilities
Module 2:	Introduces essential resources of coastal environmental systems and describes the common environmental damages caused by poor tourist facility design
Module 3 :	Focuses on local and regional coastal regulatory systems and gives an overview of regulatory instruments

Module 4: Highlights sustainable project planning and the importance of planning in project development

Module 5: Introduces the concept of sustainable infrastructure and sustainable development masterplan.

Module 6: Provides sustainable building design guidelines including a design checklist

Module 7 : Outlines monitoring guidelines for project sustainability with an introduction to Operations Maintenance and Monitoring (OM&M).

Users are expected to utilize the information presented in the Manual to advance the environmental design, construction and operation of tourism facilities as well as, as a tool for the assessment of environmentally sensitive developments including training opportunities, in their specific field of work.

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MODULE 1

THE COASTAL ECOSYSTEM AS A RESOURCE BASE

THE COASTAL ECOSYSTEM AS A RESOURCE BASE

OBJECTIVES:

- To give an overview of the types of marine ecosystems in the Caribbean Region.
- To identify major ecosystems that are impacted by tourism-related activities.

OVERVIEW:

- Outlines the ecosystem approach to tourism management.
- Establishes differences between marine and terrestrial ecosystems.
- Outlines measures required for effective management and conservation of marine coastal ecosystems.
- Describes major coastal ecosystems relevant to the tourism industry in the Wider Caribbean.

THE CARIBBEAN COASTAL ZONE

Integrated Coastal Area Management (ICAM) as an approach has evolved from the growing threat to the health of coastal ecosystems from user demand and inappropriate practices. The coastal area encompasses the land-sea interface, and therefore its terrestrial and marine resources. The Caribbean region relies heavily on its coastal areas and therefore coastal ecosystems is a basic resource, which provide services to support the tourism industry, mostly based on the coastal zone in the Caribbean.

The health of the tourism industry is therefore a function of the health of coastal ecosystems. Consequently it is imperative that the tourism sector be an active player in the management of the coastal zone.

The coastal zone of the Wider Caribbean which includes islands and coastal areas of the continental countries is home to some 80 million residents and 20 million visitors. Coastal areas in the region are threatened by over-exploitation of marine and terrestrial resources, poor management practices, conflicting user demand and inadequate land use planning. Increasingly dense settlements with inadequate infrastructure serve to exacerbate the growing threat to the viability of coastal ecosystems, the foundation on which the growing tourism industry is built. These ecosystems are the basis of the Caribbean's marine productivity and high biodiversity.

Management of the coastal zone must be based on an understanding of coastal ecosystems and their function, the services which they provide, the land use, settlement characteristics and economic activities and the interaction of all these components.

DEFINITION OF THE ECOSYSTEM APPROACH

The Conference of the Parties to the Convention on Biological Diversity adopted an ecosystem approach for the implementation of the objectives of the Convention. This was endorsed by the General Assembly of the United Nations in June 1997. Twelve principles of the ecosystem approach were highlighted. These are complimentary and interlinked, and together they characterize the ecosystem approach. The ecosystem approach should include a system of accountability which specifically addresses the performance of managers and decision-makers and the achievement of management objectives. These objectives are outlined below with a brief explanation of the rationale behind each:

- Management objectives are a matter of societal choice - societies view ecosystems in terms of their own economic, cultural and social needs.
- Management should be decentralized to the lowest appropriate level - decentralized systems can lead to greater efficiency, effectiveness and equity.
- Ecosystem managers should consider the effects of their activities on adjacent and other ecosystems - interventions in ecosystems often have unknown or unpredictable effects on other ecosystems and need careful consideration and analysis.

- **There is a need to understand the ecosystem in an economic context** - the greatest threat to biological diversity lies in its replacement by alternate systems of land use, and those who benefit from conservation rarely pay the costs associated with it and those who generate environmental costs often escape responsibility.

- **A key feature includes conservation of ecosystem structure and functioning** - ecosystem functioning and resilience depends on a dynamic relationship within, among and between species and their abiotic environment as well as physical and chemical interactions within the environment.

- **Ecosystems must be managed with in the limits of their functioning**- attention must be given to the environmental conditions which limit natural productivity, ecosystem structure and functioning.

- **Should be undertaken at the appropriate scale** - the approach should be bound by spatial and temporal scales that are appropriate to the objectives.

- **Objectives should be set for the long term** - ecosystem processes are characterized by varying temporal scales and lag effects which inherently conflicts with the human tendency to favour short term gains and immediate benefits.

- **Management must recognize that change is inevitable** - ecosystems have an inherent dynamism and adaptive management must be utilized in order to cater for changes.

- **Seek an appropriate balance between conservation and the use of biological diversity** - past management of biological diversity has been in the context of protected or non-protected and there is a need to switch to more flexible situations.

- **Consider all forms of relevant information** - information from all sources is critical in order to reach at effective management strategies, including scientific, indigenous and local knowledge.

- **Should involve all relevant sectors of society and scientific disciplines** - most problems of biological diversity management are complex with many interactions and implications.

MARINE ECOSYSTEMS

Marine ecosystems physical parameters include the following components:

- salinity
- type of bottom
- water temperature
- currents
- tides
- wave action

The biotic components of marine ecosystems include the diversity of plants, algae, animals and microorganisms which are present. The nutritional demands, reproduction requirements and living space, and the ways or behavior to acquire these are the biological processes. The population size is an element of equal importance.

Marine ecosystems differ significantly from terrestrial ecosystems in the relationship they have with the liquid medium by which they are surrounded. Organisms are less connected to the solid substrates in marine ecosystems - with exception of those organisms which inhabit the drier portions or less humid coasts and are attached to the substrates below the shore line - than organisms in terrestrial ecosystems. In addition, marine organisms, as a result of being submerged in the liquid matrix, are in direct contact with the chemicals which are dissolved in the water and as such are more vulnerable to contaminants and pollutants. At the same time the fluid component of the marine environment - the existing currents, waves and tides - also provide for larger mobility of organisms than in terrestrial systems. Extreme examples of this effect are the large planktonic communities which float and are transported with the currents along large distances all around the earth.

The coastal areas can be considered an interphase between three spatial communities: land, air and sea. This is not a static interphase, but an extremely dynamic one especially with relation to the interaction of the land and the sea. Dramatic changes can occur in these coastal areas as a result of volcanic eruptions and hurricanes, storm surges, and tsunamis where the effect can modify the coastal marine environment.

More subtle, constant and continuous changes such as tides, currents and normal wave action can provoke alterations to the coast, at a specific site. The natural form of the coast line is determined by its composition, geological structure, weathering processes, drainage patterns, coastal topography, hydrography and by the relative levels of the land and water.

The management of coastal resources which involves the interactions of these three types of habitats, is not an easy task. Management decisions which are applied to an inland forest are not effective for managing a mangrove forest, even if this community is also a forest composed of different species of mangrove trees. The general differences between terrestrial and marine ecosystems which have been mentioned above, requires that different measures of management and conservation be considered for marine coastal systems

IDENTIFICATION OF COASTAL ECOSYSTEMS

In coastal areas at least two habitats or environments are obvious: the marine and the terrestrial zones. This manual focuses on the ecosystems in shallow coastal waters, from the shoreline to a depth of 30 meters. This is the littoral zone.

The main coastal ecosystems of importance to tourism in the Wider Caribbean region are: the coral reefs, dunes and beaches, estuaries, sea grass beds, wetlands and mangrove forests.

CORAL REEFS

Coral reefs are an exclusively tropical ecosystem - found between latitudes, 28° North and 28° South. Coral reefs are considered to be the most productive of all ecosystems.

The hard corals - also called stony corals form the basic structure of the coral reef. Coral reefs are made of animals with simple tubular bodies, - called polyps - which have the biological capacity to form a hard external skeleton made of calcium carbonate from which an extensive submerged barrier can be formed. The health of coral reefs is dependent on clean, clear water and consistently warm temperatures.

There are different types of coral reefs, described by their shape & spatial orientation:

1. Fringing reefs - this type of reef forms a platform which is continuous along the shore line. The fringing reef is the most common type of coral reef and their relative closeness to the shoreline makes them vulnerable to impact from terrestrial activities.

2. Patch reefs - are small islands or interrupted cays, located far from the shore.

3. Barrier reefs - are extensive structures - hundreds of kilometers - which follow shore lines. The Great-Barrier Reef along the coast of Queensland, Australia is the largest in the world, while the largest in the Western Hemisphere is found off the coast of Belize, Mexico and Honduras.

4. Atolls - These are circular or semi-circular reefs which are outgrowths of corals on submerged volcanoes.

Reef - forming corals are slow growing organisms and the annual growth of a reef is from 1/10 cm to 10 cm. Corals are small carnivorous animals that capture food with their tentacles. In their evolutionary history, they have established a symbiotic relationship with microscopic algae known as zooxanthellae (dinoflagelates) which live in the tissues of individual polyps. It has been determined that the zooxanthellae play an important part in the corals' capacity to form its hard skeleton of calcium carbonate. Zooxanthellae are organisms which are photosynthetic, requiring a certain amount of light to produce their food. Because of these needs, reef forming corals need clean and transparent waters for survival.

The coral reef ecosystem is not only made up of hard corals, but also soft corals. Additionally, a solid structure, offers adequate surfaces for many organisms such as mollusks, worms and algae to establish themselves and grow. Spaces between different forms of reef and dead corals form caves, fissures and dwellings which are occupied by other organisms such as different species of fish and crustaceans.

The nutrient relationship between inhabitants of the coral reefs can be very complex, involving a great diversity of species in different levels of nutrient and energy transfer - from the zooxanthellae and planktonic algae up to the higher levels in the food chain, such as sharks. The majority of seafood and fish which are of commercial importance to the fishing industry in the Caribbean are species associated with coral reefs.

Coral reefs constitute the marine ecosystem with the largest levels of biodiversity and are important sources of biological productivity in coastal waters. They also offer a key and effective barrier against beach erosion by absorbing the energy of the waves acting as breakers.

Damage

Coral reefs are subject to considerable degrading impacts both natural and anthropogenic. These include earth tremors, storms and water temperature changes which are all natural phenomena which can damage reefs. Without human intervention, reefs are able to recuperate from the ravages of natural disasters such as hurricanes.

The community of reefs is also physically damaged by anchors from recreational and commercial boats, over-fishing and selective fishing

The community of reefs can also be subject to physical damage by anchors from both recreational and commercial fishing boats. Mechanical damage can also be caused by divers and snorkelers standing on and holding live corals. This type of physical damage has a larger and more extensive negative impact than natural phenomena.

Over-fishing and selective fishing of certain species can also affect reef growth and structure as a result of ecological changes.

Water Quality

Apart from sedimentation which can be caused by construction practices on land, changes in the quality of the water can also occur by contamination from untreated domestic wastewater, petroleum and its derivatives, pesticides, fertilizers, and other toxic substances. These can cause coral loss to such an extent that the corals are unable to recuperate. The mechanical breakdown of the hard skeleton of calcium carbonate make up the fine particles of white sand which forms most of the beaches in the Caribbean.

DUNES AND BEACHES

For the purpose of this Manual two ecosystems - dunes and beaches (although governed by ecologically distinct attributes), must be seen as an important unit of the lower coasts. These are dynamic features of the coast line as they are subjected to continuous movement of sand particles. The changes in shape and contour of a beach and its dune are noticeable at different periods of the year. At high tides beaches change their contours with an increase in the slope. Strong winds which blow offshore, push back the sand toward the beach, thus reducing the angle of the inclination.

Sand deposits brought down from mountainous areas via rivers and creeks also contribute to the formation of dunes and sandy beaches. The wind, waves and marine currents along the coasts are the responsible agents for distributing the sand all along the coasts. Wind currents are the main factor in dune formation. With time, a plant community composed of vines, grasses and shrubs can establish itself over the dune. This vegetative community contributes to stabilizing the dunes while protecting its sand deposits.

Extraction of sand from the dunes and beaches for the construction industry is a major negative impact for the conservation of these ecosystems. The construction of piers, wave breakers, and ramps for boats, and dredging without considering the dominant patterns of shore line currents in the zone which supply and transport sand along the coasts, can result in accelerated erosion of beaches.

In ecological terms, dunes and beaches can be considered relatively inhospitable habitats because of the instability of the substrate. Nevertheless, this does not mean that plants and animals of diverse species with different adaptations in body, behaviour and biological functions cannot tolerate the constant movement of sand deposits. Different species of molluses, crustaceans, and annelids which possess shells or hard carapace or form their own protective tubes with sand can live buried in the sand or between sand particles.

Beaches and dunes behind them, represent the immediate line of defense of the coastal valleys against erosion, especially on the coasts which do not have protection from a coral reef or mangrove forest. The loss of beaches and dunes have serious consequences among which is the immediate erosion of the coast line, resulting in saline intrusion and the alteration of soils reducing its high agricultural potential.

MANGROVES

Mangrove forests are coastal forests formed by different species of trees commonly called 'mangroves,' which have the special capacity to withstand high salt concentrations and fix their roots in loose soils. Like coral reefs, mangroves are exclusively tropical ecosystems. The main species of mangroves in the Caribbean region are: the red mangrove (Rhizophora mangle), the black mangrove (Avicennia germinans), the white mangrove

(Laguncularia racemosa) and the button mangrove (Conocarpus erectus). All these species occupy a boggy fringe along the edge of the coast. The red mangrove, is found directly in contact with the sea, while the black and white mangrove occupy marshy areas in the interior. The button mangrove occupies the driest and highest part of the coast.

The morphological and physiological adaptations of the mangroves permit them to colonize areas of the coasts which other species are unable to inhabit. The red mangrove is able to filter sea water, removing the salt, which would be toxic to the plant. The black and white mangroves also possess structures in their leaves which permits them to eliminate the excess salt that enters with the water through their roots. The red mangrove possess a root system in the form of stilts called prop roots which permits it to find support in completely unstable substrates. The black and white mangroves produce respiratory roots called pneumatophores which grow above the inundated soil and permit the exchange of gases between cells in the roots and the atmosphere. The red mangrove has pores or lenticels in its roots for the same purpose.

The ecological role that the mangrove forest plays as an ecosystem, has great value not only as a keystone ecosystem but also foreconomic and social reasons.

Of all the coastal ecosystems, mangrove forests have one of the highest demands for use.

Mangrove forests have a high level of productivity and play an important role in the transformation of organic material and the transport of nutrients and energy.

Many species of fish, shrimp, mussles and oysters, all of high commercial value, depend on the transfer of nutrients from the mangrove forest. The lagoons inside the mangrove forest also provide an important habitat by serving as nesting sites for aquatic birds, reptiles and other aquatic fauna.

During the hurricane season in the Caribbean region, (normally July to August) mangroves act as a buffer against winds, storm surges and waves, protecting the land mass from destructive forces. The prop roots of the red mangrove, which form a complex interweave at the base of the trees, contribute by forming an effective method in reducing the energy of the sea, retaining sediments, stabilizing the coast line and preventing and retarding.

Of all the coastal ecosystems, mangrove forests have one of the highest demands for use and consequently receives a high level of anthropogenic negative impact. The space occupied by mangrove forests are generally viewed as swamp areas, unhealthy, and used for disposal of domestic and industrial waste. As such, they are converted to dumps for solid waste and receive sewage effluents from cities in many instances.

Mangroves are located in low level plains, and are often filled or drained which changes the topography of the land, alters the ecosystem and creates land of high commercial value. Mangroves are often used as firewood and forests have been cleared for the construction of fish ponds or mining of peat as an alternative energy source.

SEA GRASS BEDS

Marine grasses are species of plants with leaves, stems, flowers or angiosperms.

The marshy bottoms of low level waters, between mangrove forests and coral reefs waters are often colonized by different species of marine grasses. These are species of plants with leaves, stems, flowers or angiosperms. Although their origin is terrestrial, these species have adapted to a submerged saline environment. These are found in shallower waters up to 25 meters depth. Since these are photosynthetic organisms, they depend on clear water which allow the penetration of sunlight.

Even though these are not taxonomically true grasses - their type of growth and leaf structure have resulted in the popular name 'sea grasses.' The turtle grass (Thalassia testudinum) and the manatee grass (Syringodium filiforme) are the most abundant seagrass species in the Caribbean Sea and the Gulf of Mexico. The turtle sea grass dominates plains, and thus these are often referred to as 'Thalassia beds' although other species of grasses are also found at the same sites.

Thalassia possesses a creeping stem or rhizome, and a fibrous root system which permits it to form a sort of thick cushion carpet on the slimy bottom where it grows.

Marine grass plains have a high level of primary productivity, as a result of their own photosynthetic activity but also because of the other photosynthetic organisms which live on the leaves of the Thalassia. Seagrass beds are found between mangrove forests and coral reefs they provide the connection between these two coastal ecosystems serving as an important example of the complex linkages between coastal ecosystems which are vital to the maintenance of their ecological integrity. Many species of fishes and other organisms associated with coral reefs and mangroves move to sea grass plains using it as habitat at some stage of their life cycle or even daily for feeding purposes.

Commercial fishing and recreational boats damage sea grasses by tearing them from the substrate.

Sea grasses are subject to negative impacts from human activities along the coast line. One impact is from the increase in the quantity of sediments along the coast which increases turbidity in the water and decreases light penetration that is needed for their growth. Commercial fishing and recreational boats damage sea grasses by tearing them from the substrate. Anchors from boats also leave large scars in the plain which are often not recognized or restored. Since sea grass plains are much less obvious as compared to mangrove forests, their loss is frequently not noticed.

Sea grass beds provide an important ecological service to coastal ecosystems. As a result of their shape and growth pattern they are extremely efficient in the stabilization of soils between mangroves and the coral reef. They also trap much of the sediment which is washed from the terrestrial environment or from the mangroves and would be harmful to the corals. Sea grasses occur in calm waters and serve as breeding areas as well as providing protection for juveniles of many species and pasturing sites for adults of some species such as fish, turtles and manatees.

ESTUARINE SYSTEMS

Estuarine systems include the coastal bodies of water, plains, enclosed or semi-enclosed lagoons, small bays and marshes at the mouth of rivers. Salinity ranges from low (fresh water), to brackish or high salinity waters indicating truly marine conditions. The diversity of estuarine habitats present in a region will depend on several factors including the geology of the area, topography of the land, rainfall and ocean currents.

The organisms which inhabit estuaries are adapted to daily and seasonal salinity fluctuations. The introduction of fresh water from inland water sources, the introduction of saline water with the changes in the tide levels and the cyclic pattern which are established in the coastal lagoons are, in part, responsible for the high biological productivity of these ecosystems.

Of all the coastal ecosystems, estuaries, including mangrove forests in general, probably receive the largest quantity, diversity and intensity of anthropogenic impact.

These littoral basins, which can take many different shapes, are of great importance in the life cycle of many animals which inhabit seas far from the coasts because they provide sites for breeding, reproduction and feeding in different stages of the life cycle. The level of productivity in coastal areas, depends on the estuarine ecosystem of the coasts. An example is the fisheries in the Gulf of Mexico. Another ecological service these systems provide is the exportation of nutrients to the ocean.

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Of all the coastal ecosystems, the estuaries, including mangrove forests in general, probably receive the largest quantity, diversity and intensity of anthropogenic impact. These impacts may result in alteration of water circulation patterns from land to coast and the desertification of watered areas. Estuaries are also used as a repository for all types of contaminants from industrial and domestic wastes. The pollution impacting estuaries and adjacent ecosystems often points to the ignorance of the importance of these coastal ecosystems.

MODULE 2

TOURISM AND DEGRADATION OF COASTAL RESOURCES

TOURISM AND DEGRADATION OF COASTAL RESOURCES

OBJECTIVES:

- To highlight the effects of tourism and its impact on the degradation of coastal resources
- To provide guidelines as to how these impacts can be effectively mitigated
- To describe how Environmental Management Systems (EMS) and Codes of Conduct can work to achieve efficiency in the tourism industry

OVERVIEW:

- Outlines 3 major types of environmental impacts on coastal resources and the likely consequences of these impacts
- Examines principles of eco-efficiency, cleaner production ans eco-designs as inputs to planned tourism activities
- Outlines tools and guidelines which can be put in place to ensure effective environmental management

ENVIRONMENTAL IMPACTS OF TOURISM

While the future economic success of the tourism industry is dependent upon a quality environment, its past success has fostered rapid development that has significantly contributed to degrading the environment. Additional stress is being placed on already burdened ecosystems. Several red flags are appearing as we approach the 21st century: quickly depleting fresh water supplies, increased volumes of solid waste, potential contamination of aquifers and marine environments due to inadequate liquid waste systems and sedimentation, loss of habitats, increased pressures on public utilities, inadequate and costly energy sources, and lack of environmental awareness by local inhabitants and foreign visitors.

The impacts of tourism must be considered in terms of scope, frequency (sporadic vs. Chronic), ecosystem dynamics, and cost (lost revenue or rehabilitation costs). Impacts are not uniform, as the coastal zone is a complex of inter-linked ecosystems, with different levels to withstand stress. The detrimental impacts vs. Benefits of tourism must be considered so as to seek a desirable balance between coastal resource use and environmental quality.

In the process of achieving sustainable tourism in the Caribbean, there is a need to promote the development and adoption of management tools. Other actions must also be taken to ensure the viability of the industry and hence benefits for future generations. These actions include the adoption of technologies and best practices for environmental management, establishment of guidelines and self-regulatory programmes, integration with local communities, protection of natural areas and habitats, and the minimisation and proper disposal of wastes.

Tourism impacts, and benefits, various other important economic industries in the Caribbean. The long-term sustainability of tourism as the engine for growth in the region depends on the Industry' ability to interface and support these other sectors such as agriculture, health, public utilities, and the environment. The concept and application of integrated coastal area management principles are particularly relevant in this context, to better integrate tourism in the planning and management of coastal areas.

TYPES OF IMPACTS

Impacts of tourism on natural resources in the Wider Caribbean are many, particularly on costal resources, as much of the tourism in the Caribbean is based on the marine environment.

These can be summarized in three major types of environmental impacts:

1. Excessive use of renewable and non-renewable natural resources (e.g. potable water, unrenewable energy, agricultural resources, pressures on wild life for the souvenir trade, over fishing and deforestation)
2. Emissions of pollutants (inappropriate wastewater, solid waste disposal, maintenance of boats)
3. Physical impact on the environment such as coastal erosion due to inappropriate building and design, sand mining; filling of wetlands; dredging.

These issues may be addressed by the following actions:

- Diminish use of natural resources
- Diminish emission of pollutants into the environment
- Minimize and prevent physical impacts on the environment

DEFINITION OF THE ACTIONS

Principles

In order to achieve the three broad categories of action above, three principles should be taken into consideration in all phases of the operation, both in existing and planned activities. These are:

- Eco-efficiency
- Cleaner production
- Eco-design

Solutions

The solutions to cope with impacts expected from tourism activities should be derived by puting the above-mentioned principles into practice. For each problem there may be many different alternatives to reach the same objective. Thus, many times, the one to be adopted depends on the type of activity, the extent of the impact and if the operator is already into business or in the planning stage. In general, all three principles can be put into practice by:

- Improving housekeeping procedures
- Substituting the technology
- Modifying the design characteristics or policy

The major impacts on the environment caused by the tourist industry, long-term objectives in minimizing these impacts, principles to be followed and the solutions to working within these principles are summarized in Table 1.

In many countries, efforts have been made at the national level, efforts have been in place to address the problem of coastal resources degradation as a result of the tourist industry. UNEP (1997) lists these efforts as:

- Development of integrated coastal zone management plans and guidelines
- Improved land use planning and development control
- Development of environmental management tools
- Preparation of policies to deal with coastal resources use and coastal development
- Development of emergency response systems/teams for spills from oil and other hazardous chemicals
- Promotion of sustainable harvesting methods for some coastal resources

Module 2 - Table 1:
Summary of the major impacts of tourism on the environment and examples of how some of these impacts can be reduced

IMPACT	OBJECTIVE	PRINCIPLE	SOLUTIONS
Excessive use of natural resources	Minimize use of natural resources	ECO-EFFICIENCY	- Improve housekeeping procedures - Substitute technology - Modify the 'design'
Emission of pollutants into the environment	Minimize production of pollutants	CLEANER PRODUCTION	- Improve housekeeping procedures - Substitute technology - Modify policies
Impact on the environment due to building and infrastructure design and siting	Minimize physical impact on the environment	ECO-DESIGN	- Incorporate in the design phase all the necessary minimisation aspects - Modify, where possible, sources of impact.

- Development of pollution control strategies
- Construction of tourism infrastructure, primarily sewage systems
- Institutional strengthening for regulatory agencies
- Greater involvement of local groups and non-governmental organizations in decision making and resource management opportunities
- Establishment of marine parks
- Development of environmental databases
- Rehabilitation of degraded areas

TOOLS

Tools can be put in place which will ensure that actions towards improved environmental performance are effectively implemented. Three tools which require voluntary compliance will be discussed:

- Environmental Management Systems (EMS)
- Codes of Conduct
- Eco-label Schemes

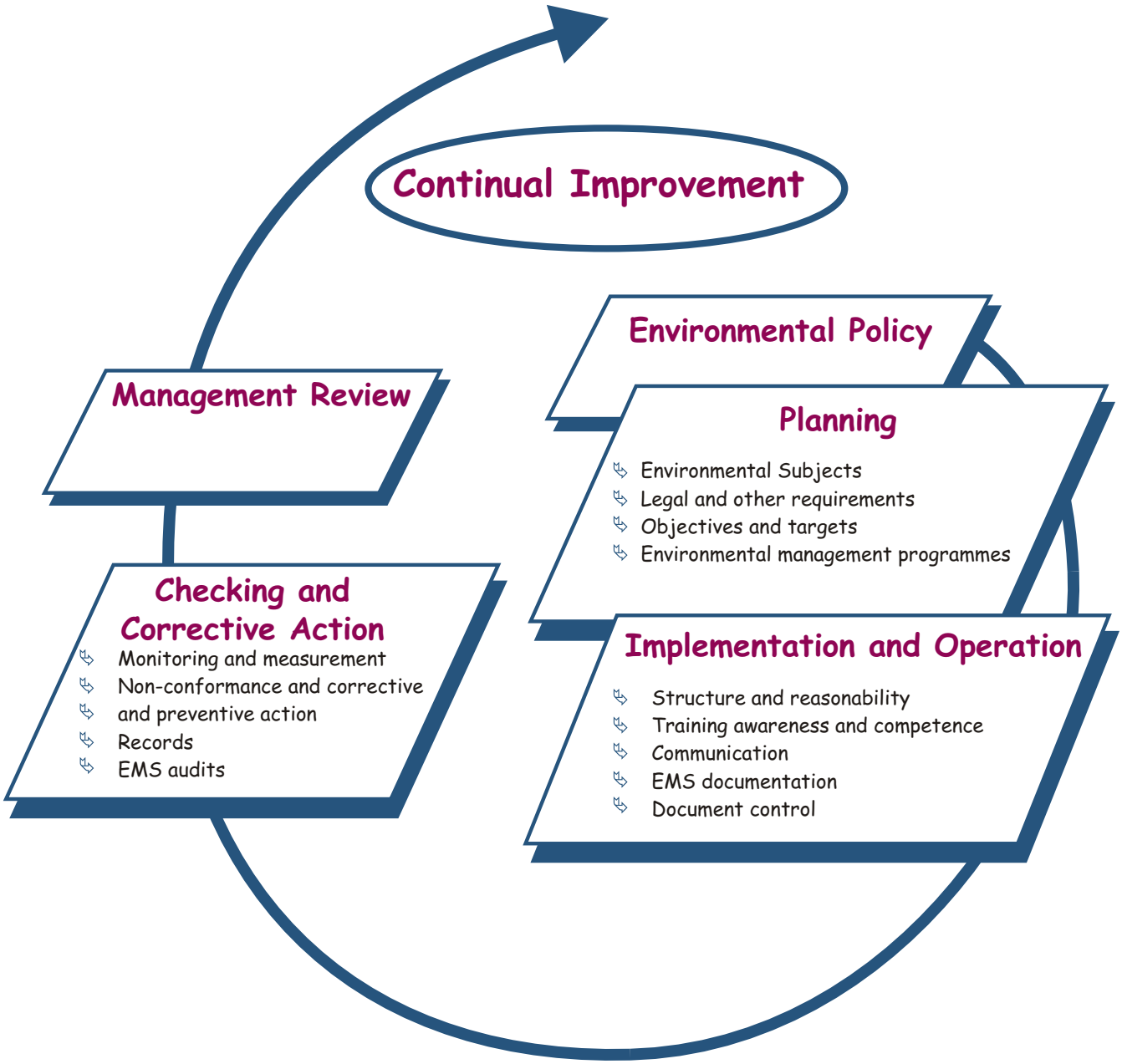
ENVIRONMENTAL MANAGEMENT SYSTEMS

An Environmental Management System (EMS) offers a structured and systematic method to incorporate environmental care. An EMS can:

- decrease pressure from customers and relevant stakeholders (local community and NGO's in particular)
- improve the corporate image by responding to the increase in environmental awareness
- increase competitiveness, not only due to the decrease in costs, but by increase in a more environmentally friendly image
- possibly prevent the introduction of fiscal measures and in general, better financial relationship with relevant institutions (banks, governments, aid funds).
- conducting an initial environmental review
- defining an environmental policy
- developing an environmental action plan
- defining environmental responsibilities
- developing internal information and training courses
- auditing the environmental management system
- conducting and environmental management review

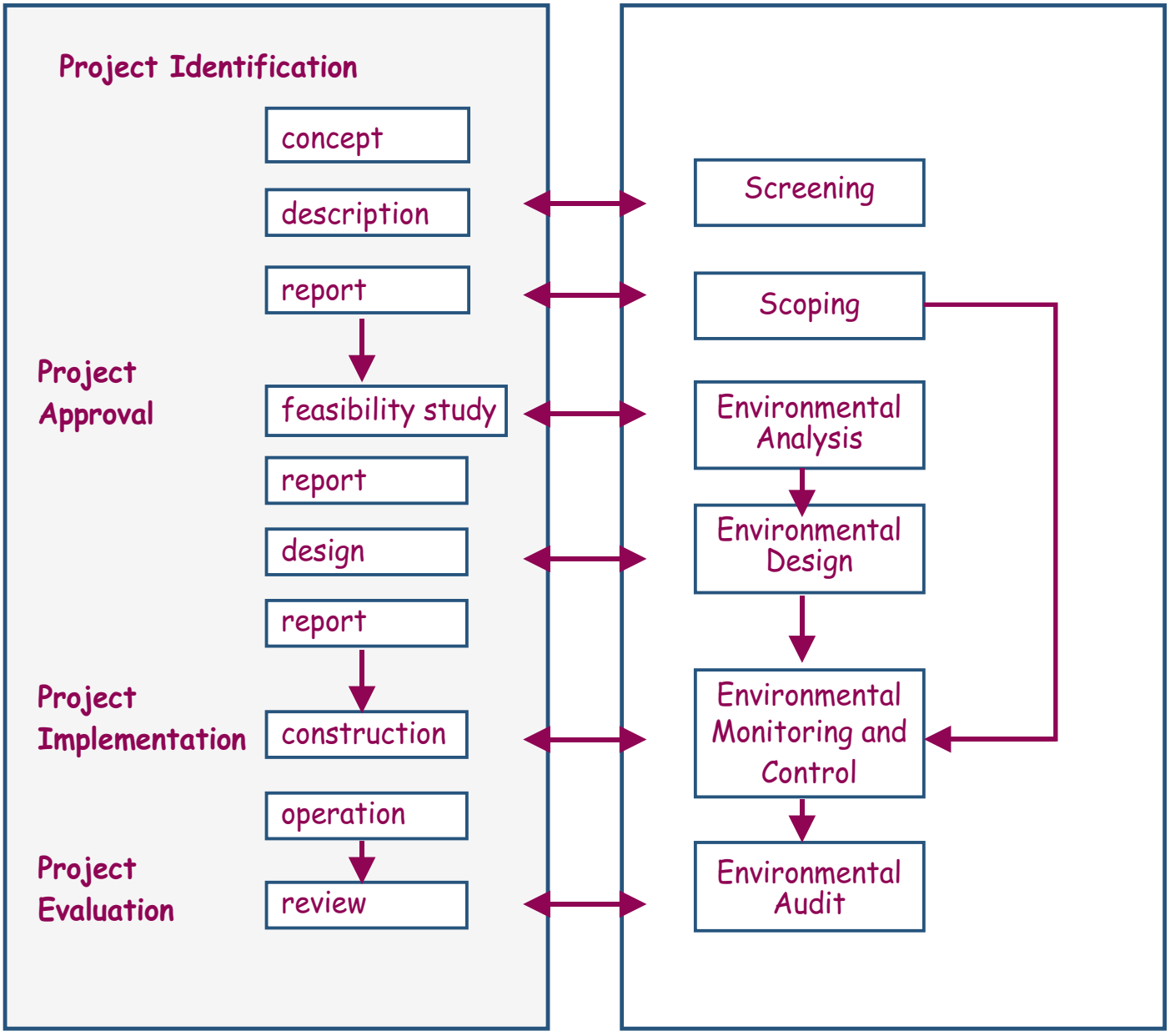
Module 2 - Figure 1: Environmental Management System Model (depicts a model for an environmental management system (EMS) which includes environmental policy, planning, implementation and operation, checking and corrective action and management review. The aim of implementing an EMS is to obtain continual improvement in procedures and operations. Module 2 - Figure 2: Integration of environmental management activities, shows the steps in which environmental management activities can be integrated into the project development cycle.

Module 2 - Figure 1:
Environmental Management System Model
(ESL/ICF, Kaiser, Canada, 1997)



Module 2 - Figure 2:

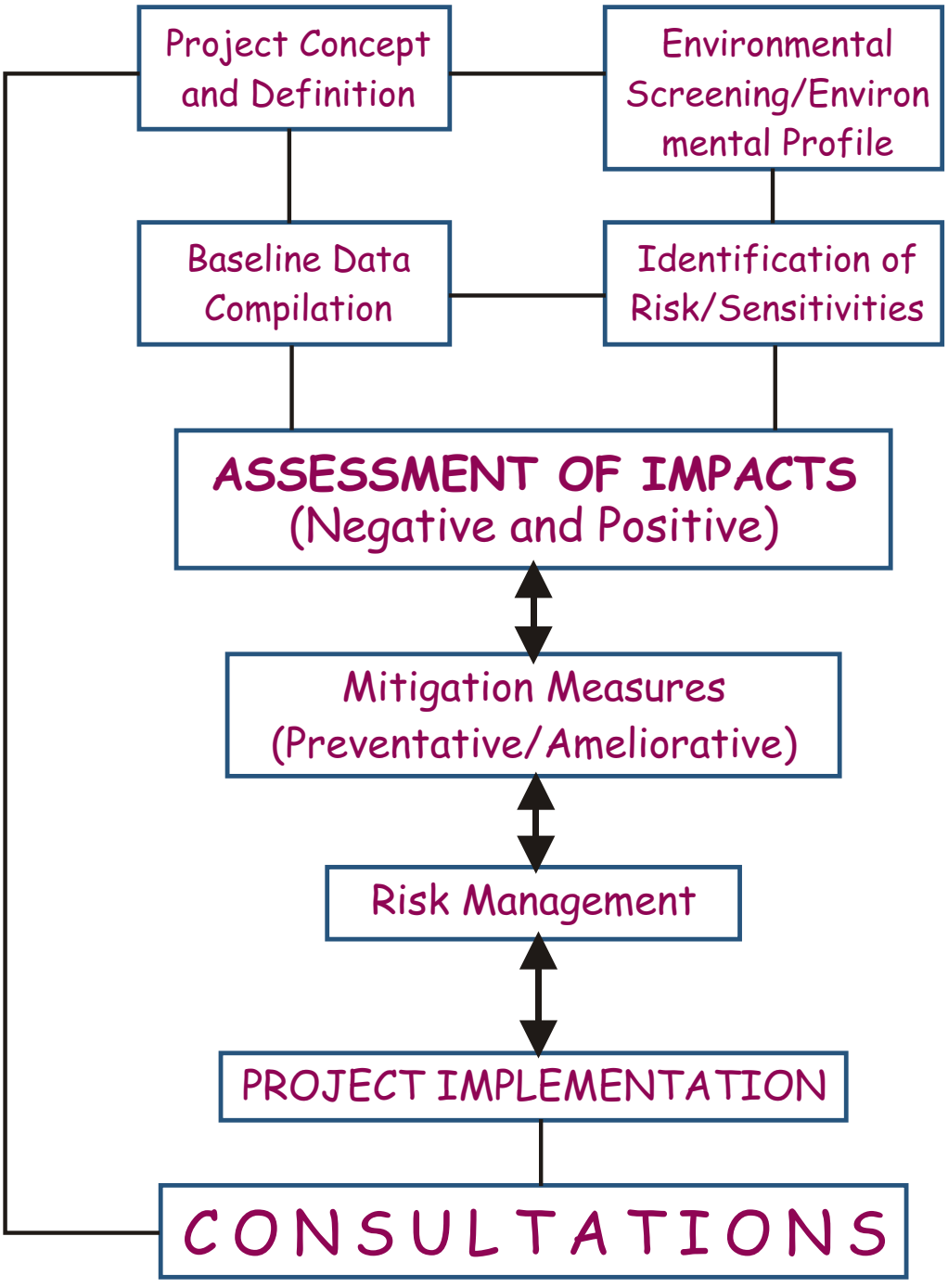
Integration of environmental management activities,
International Project Development (ESSA Ltd., B. Sadler, J. Wiebe, "Environmental Managemental Framework for International Development, 1996")



Module 2 - Figure 3:

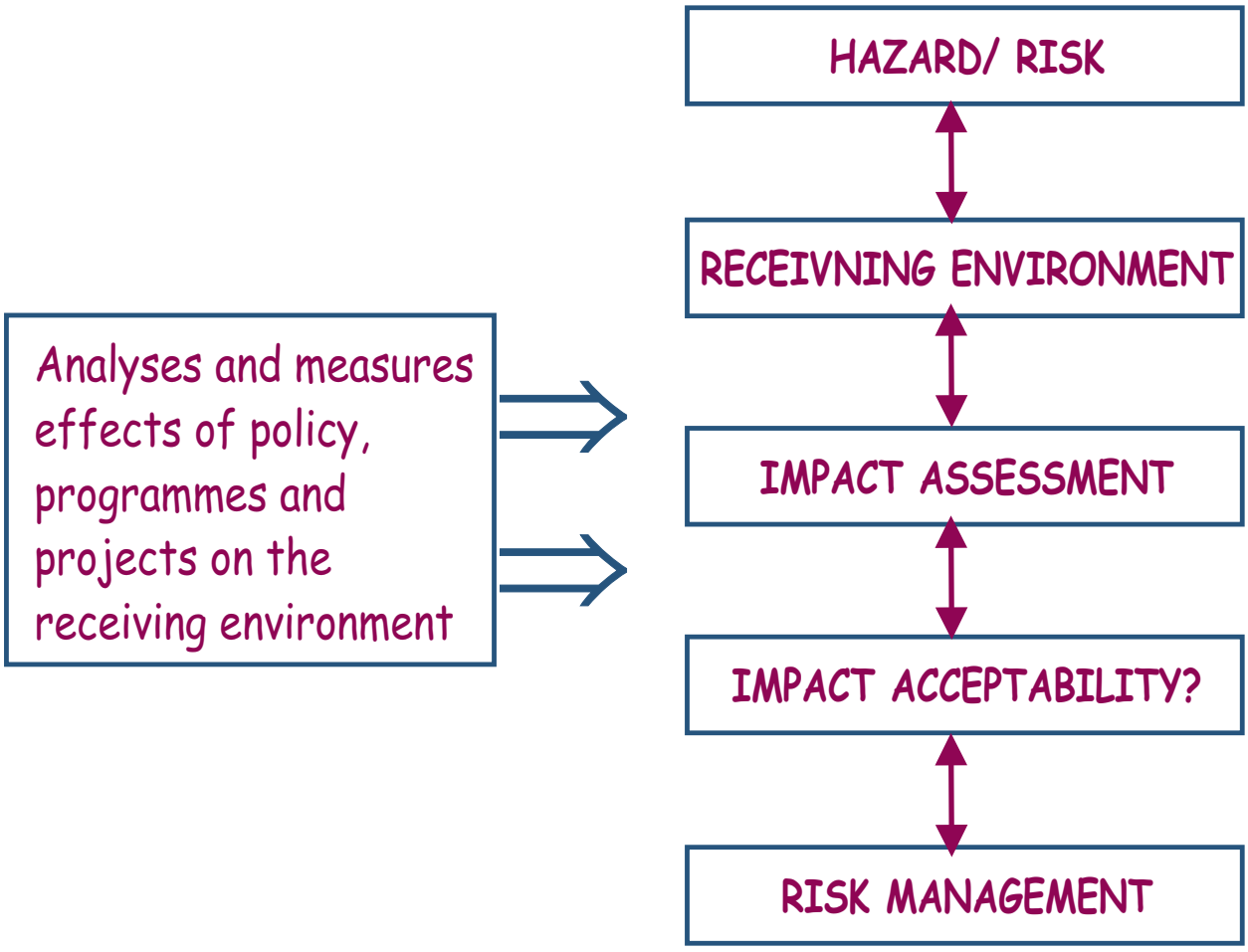
Environmental Impact Process

- Environmental Solutions Graphics Library



Module 2 - Figure 4:
Environmental Assessment
- Environmental Solutions Graphics Library

WHAT IS IT?



CODES OF CONDUCT

Codes of Conduct are sets of guidelines which the industry itself or public authorities may draw up as a guide for enhancing the industry's performance and operation in designing viable policies, programmes and projects which reflect the goals of sustainable development. Codes of Conduct have several objectives which if attained should lead to specific benefits. These are highlighted below in addition to suggested ways of implementing a code of conduct and some of the benefits derived by the tourism industry from monitoring and reporting on progress achieved in complying with recommendations usually contained in Codes of Conduct.

The objectives of Codes of Conduct

The Codes of Conduct serve as a catalyst for dialogue in the following ways:

- Creating an awareness within industry and governments
- Heightening awareness among international and local visitors
- Sensitizing the host population
- Encouraging co-operation

The benefits of Codes of Conduct

- Improvement of the natural environment and in the sustainability of the tourism industry
- Improved image for the tourist destination
- Improvements in the quality of tourism products
- Political support
- Improved ability to attract tourists
- Improved motivation and team spirit
- Improved company image
- Reduced costs
- Support for the local economy
- Improved quality of life for the host communities
- Training of staff to strengthen environmental management capabilities

Content of the Codes

- the tourism industry
- the host community
- the tourists

Implementation

Implementation of Codes of Conduct may be achieved through the following ways, which may be delivered in combination:

- Creation of a working group
- Dissemination of information and publicity campaign
- Publications
- Seminars and conferences

- Pilot projects
- Awards
- Education and training
- Technical assistance

Monitoring

Monitoring implementation of Codes of Conduct should be done in order to:

- Improve policy setting and environmental performance
- Promote openness
- Assess achieved progress

Reporting

Reporting on progress achieved in the implementation of Codes of Conduct provides the following benefits:

- An opportunity to inform customers
- Improvement of the corporate image
- Ability to assess customer awareness and attitude

ECO-LABEL SCHEME

Over the past years, a number of countries and international programmes have been involved in developing different criteria for environmental certification for Key Areas of the tourism sector (e.g. accomodations, tourism service facilities, cultural and entertainment sites), which are also referred to as "Eco-labelling." There are five steps to designing an Eco-label Scheme:

I. Evaluate the needs

- Define a clear motive
- Set the geographical scope
- Select the focus area
- Define the promoter

II. Define the criteria

- Establish the criteria

III. Establish implementation and monitoring measures

- Applicants' assessment
- Rating
- Monitoring

IV. Define the structural framework

- Application procedure
- Administration structure
- Membership fees
- Duration
- Technical assistance
- Marketing support
- General rules

V. Assess effectiveness

- Get feedback
- Incorporate the results

Potential benefits of Eco-labels

Eco-labels can:

- Help the entrepreneurs in singling out critical issues
- Enhance the implementation of eco-efficient and cleaner technology-based solutions and of efficient house-keeping measures
- Guarantee an external source of monitoring and public reporting
- Increase/improve environmental performance in the tourism sector
- Involve small and medium size enterprises in improving environmental performance
- Provide environmental information to customers

To be effective eco-labelling schemes in the tourism sector need to be:

- Credible
- Transparent
- Well managed
- One tool among many

ACTION AREAS

In order to reduce the negative impacts of the tourism industry on the environment, there are key issues that need to be addressed. As an example these are divided below into action areas for four main targets of the tourist industry - accommodations, on beaches, golf courses and tour operators.

Accommodations

- environmental policy
- water
- energy
- solid waste
- purchasing
- waste water
- transport/traffic
- noise
- air/emissions
- landscape/surroundings
- facility design and construction/ cultural heritage
- joint local environmental efforts
- communicating to guests
- training staff
- other environmental/health consideration

Coastal Areas - Beaches

- Water quality
- Beach and intertidal areas
- Safety
- Beach management
- Cleaning
- Information and Education

Golf courses

- Nature conservation
- Landscape and cultural heritage
- Water resource management (conservation and quality)
- Turf grass and pest management
- Energy efficiency and purchasing policies
- Education and training
- Communications
- Wildlife and habitat management

Tour operators

- Pre-departure information
- Visitor information and education
- Contribution to local development and conservation efforts
- Environmental impact management
- Local accommodation

ENVIRONMENTAL IMPACT ASSESSMENT

The tools discussed above require voluntary compliance. However an important process in environmental management is the Environmental Impact Assessment (EIA). The EIA is a study which should include baseline scientific information of a site, various aspects of a proposed development, potential impacts (both positive and negative), of the development on the ecology of the site, and mitigating actions which can reduce or eliminate the negative impacts in order to maintain, as much as possible, the ecological integrity of the area and ensure a sustainaable development. At present, the EIA is seen as a permitting tool and needs to be viewed as an essential requirement in the development process towards attaining sustainability.

The EIA may be viewed as :

- A Process
- A Study
- A Procedure
- A Management Tool

As a Process, an EIA enables environmental issues to be taken into account at all stages of project planning and development. As a Study it identifies, predicts and evaluates environmental impacts of projects as well as mitigating adverse effects and maximizing environmental benefits. As a Procedure the EIA provides information for decision-makers. As a Management Tool it forms a basis from which management decisions can be made by referring to specific issues which are presented.

MODULE 3

COASTAL AREA MANAGEMENT AND THE NEED FOR AN INTEGRATED APPROACH

COASTAL AREA MANAGEMENT AND THE NEED FOR AN INTEGRATED APPROACH

OBJECTIVES:

- To provide an understanding of ICAM and its principles
- To offer a framework and guidelines for Integrated Coastal Area Management

OVERVIEW:

- Gives broad definition of ICAM
- Outlines principles of ICAM- Precautionary, Polluter Pays, Resource Accounting, Trans-boundary Responsibility and Inter-generational Equity
- Presents guidelines to effective implementation of ICAM Principles
- Outlines typology of coastal zone management and environmental issues relevant to ICAM

INTEGRATED COASTAL AREA MANAGEMENT (ICAM) DEFINED

Integrated Coastal Area Management (ICAM) has been defined by the World Bank as "... a governmental process consisting of the legal institutional framework necessary to ensure that development and management plans for coastal zones are integrated with environmental (including social) goals and are made with the participation of those affected.

The purpose of ICAM is to maximize the benefits provided by the coastal zone and to minimize the conflicts and harmful effects of activities upon each other..."

The purpose of ICAM is to maximize the benefits provided by the coastal zone and to minimize the conflicts and harmful effects of activities upon each other..."

ICAM has also been described as:

"... a comprehensive, multi-sectoral, integrated approach to the planning and management of coastal areas. This encompasses the process of assessment, planning, and management for the sustainable development, multiple use and conservation of coastal areas, resources and ecosystems. It is a process that must be tailored to fit into the institutional and organisational environments of the countries involved, including political and administrative structures, cultural patterns and social traditions (Scura, et al., 1992). With the... diversity of environmental, social, cultural and economic conditions the ICAM process will, by necessity, differ from island to island." (SPREP, 1993).

ICAM is "... a dynamic process in which a coordinated strategy is developed and implemented for the allocation of environmental, socio-cultural, and institutional resources to achieve the conservation and sustainable use of the coastal zone." (McLean and Mumura, 1993).

ICAM involves management of the resource base for sustainable development; management of the resource base for coastal tourism; management of the coastal ecosystem; and management of the ecosystem through partnerships. The principle of ICAM is that it should take the form of a multi-disciplinary and inter-disciplinary approach, it should be area/country specific and should be good business. Education, incentives and enforcement are all important aspects to ICAM.

PRINCIPLES OF ICAM

- Precautionary Principle
- Polluter Pays Principle
- Use of proper resources accounting
- Principle of trans-boundary responsibility
- Principle of inter-generational equity

Activities of integrated coastal area management require data and information, international and regional cooperation, which should all be management related.

Means of Implementation

Effective implementation of ICAM requires sound knowledge of science and technology particularly relating to the, structure and functions of ecosystems, and their interactions, as well as uses of and needs in the coastal area. These must be accompanied by human resources development in the form of adequately trained personnel, such as, enforcement personnel, educational officers, tour guides and scientists. Long term capacity building should also be encouraged which should include upgrading and maintaining staff capabilities and resource materials. All of these require adequate financing which should be sought from the public sector, private sector, institutional bodies, non-governmental organizations and other relevant stakeholders. In summary key areas for the implementation of ICAM are:

- Science and Technology
- Human Resource Development
- Capacity Building
- Financing

KEY STEPS IN ICAM

The main steps in ICAM are, firstly, agreement on the problem being faced and the goals to be achieved in the application of ICAM principles and programmes. Secondly, to acquire necessary information - biological, chemical, physical, socio-economic, legal and institutional, and to analyze the information in order to properly assess the current status of an area, the needs for the area, the demands being placed on the resources and how the information can best be used. An action plan should be generated and the necessity for modification of inadequate management practices should be accepted as appropraite. Organizing and achieving interagency cooperation can be time consuming and may seem to be futile, but this is important for involvement of stakeholders at all levels.

Incentives and Alternatives

Incentives for integrated coastal area management can be brought about by control of coastal resources by communities, offers of technical and financial assistance as well as tax and other financial incentives. Development of alternatives should also be considered as adjunct to restricting resource use.

FRAMEWORK OF INTEGRATED COASTAL AREA MANAGEMENT

Integrated Coastal Area Management requires a framework on which key actions, priorities and solutions can be linked. A management strategy should include provisions for several different activities as outlined below:

- Identification and assessment of problems.
- Setting management objectives for priority problems.
- Identification, evaluation and selection of strategies and measures,
- including management approaches.
- Criteria for evaluating the effectiveness of strategies and programmes.
- Programme support elements.

Coastal Management can be divided into three main types which are based on several factors including, ecological processes, institutional capacities and levels of planning and regulation. These are summarized in Table 1. Table 2 provides a selection of environmental issues which are relevant to ICAM in the Wider Caribbean region and associated criteria referring to management of issues.

Module 3 - Table 1:
A Typology of Coastal Management

Enhanced Sectoral Management	Coastal Zone Management	Integrated Coastal Management
Focus on a single sector or topic but explicitly addresses impacts and interdependencies with other sectors, ecosystem processes and institutional capacity.	Multi-sectoral planning and regulation focused upon the characteristics and management issues within narrow, geographically delineated stretches of coastline.	Expands the cross sectoral feature of coastal zone management to consideration of the closely coupled ecosystem processes within coastal watersheds and oceans.

Module 3 - Table 2:

Selection of Environmental Issues Relevant to
Integrated Coastal Area Management in the Caribbean

	CRITERIA			
ISSUE	National Scale	Multiple Scale	Trans-boundary Impact	Data Availability
Sewage Treatment and Disposal				
Solid Waste Disposal				
Storm Water Discharge				
Resource Assessment				
Beach Loss				
Deforestation				
Destruction of Wetlands				
Water Supply				
Development Control				
Heavy Metal Pollution				
Oil Pollution				
Introduction of Foreign Species				
Depletion of Ground Water				
Coastal Erosion				
Climate Change				
Loss of Biodiversity				
Sand Loss				
Over-fishing				
Natural and Man-Made Hazards				
Transportation Needs				
Water Sports				
Public Awareness and Education				
Carrying Capacity				
Agency Collaboration				

CAPACITY BUILDING

The need for coastal zone planning and management has become critical in the past decade, and many countries have been putting plans in place to achieve this. Following the1992 Earth Summit in Rio de Janeiro, Brazil, guidelines were established in Agenda 21 - a comprehensive global environmental strategy - for capacity building in coastal zone management for individuals and institutions:

"Coastal states should promote and facilitate the organization of education and training in integrated coastal and marine management..."

"International organizations... should support (the capacity-building efforts of) coastal states,... devoting special attention to developing countries"

Capacity building at these levels must emphasize the knowledge and skills required by effective practice of coastal management of which planning is an important component.

COASTAL ZONE MANAGEMENT

> The coastal zone planner must be sufficiently equipped to bring about changes in societal values and behaviour complementary to existing environmental laws, regulation and plans.

To effectively manage coastal ecosystems, managers and planners must be equipped with the necessary combination of knowledge, skills, and attitudes. This includes knowledge of strategic analysis and the policy process, knowledge of how ecosystems function, as well as an understanding and appreciation of the socio-cultural realities of the respective area. The coastal zone planner must be sufficiently equipped to bring about changes in societal values and behaviour complementary to existing environmental laws, regulations, and plans.

Many plans, while technically sound cannot be translated into meaningful action. Very few of them are successfully implemented as the people affected cannot support the actions proposed. Consequently, the symptoms of unsustainale use of our coastal resources continue to threaten the viability of tourism and other activities in the region.

The concepts underlying coastal resource management goals, strategies and plans must therefore lead to a workable balance between user groups in a given place and the ecosystems with which they interface. Two concepts are central to this process:

Systems thinking in the management of ecosystems

- understanding of the processes that drive ecosystems and the inter-relatedness of each part

Adaptive management

- managers and planners must view their work as a series of progression through the learning cycle where they will discover what is feasible in a given area and what strategies are best to achieve more sustainable forms of development.

The ICAM manager/planner must adopt both approaches, but more critically, must address the development issues and new approaches to governance at the community level. The task takes on greater proportion for the Wider Caribbean region where the majority of people depend on the coastal resources for a living, and where poverty abounds. The balance between the sustainable use of resources and survival is not easy to achieve.

Coastal zone managers and planners need to integrate the concepts from various disciplines such as natural science, economics, law, and anthropology into resource management strategies that will make a difference.

They must be specially educated in the art and science of integrated thinking, and the programmes designed should be shaped to impart the skills, knowledge, and attitudes required to effect change in ecosystem management.

The knowledge and skills of an ICAM manager fall into three broad categories (Olsen, 1995) as outlined below.

SKILLS IN STRATEGIC ANALYSIS AND THE POLICY PROCESS

To achieve positive response from an integrated scheme, management personnel must have the ability to "articulate a vision and inspire the collaboration required to achieve the programme's objectives". Training programmes for coastal managers should therefore, "cultvate the skills required of an effective agent of societal change".

Strategic analysis is important in bringing about behaviour modifications in the use of coastal resources, in particular, resource exploitation and the allocation of benefits. The task is however, challenging given the complexities in the institutional arrangements governing the management of coastal ecosystem. A solid foundation is required in the skills and knowledge required for:

- Conflict resolution
- Managing group processes
- Administration of complex institutions and programmes
- Design and administration of trans-disciplinary research programmes
- Design and administration of public education and public participation programmes
- Programme evaluation"

These special skills including the ability to synthesize, interpret, and present complex sets of information. They are passed on from one generation to the next, and should form an important component of any training programme. Oslen outlines steps in the evaluation of each generation of a Coastal Zone Management Programme.

KNOWLEDGE OF HOW ECOSYSTEMS FUNCTION

ICAM planners and managers must be equipped with the kind of technical knowledge required to transcend the boundaries of a particular science. Such persons must be able view the process that governs the functioning of ecosystem and its response to anthropogenic and natural changes in a wider perspective.

The inability to understand the interconnections and interdependencies between the coastal sea, estuaries, and their watersheds is a serious set back in the region's attempts at ecosystem management. Technical knowledge required to assess the implications of scientific uncertainties is also important in ecosystem management. Ludwing, Hilborn and Walters (1993) offer the following principles for effective ecosystem management:

"Act before scientific consensus is achieved."

"Rely on scientists to recognize problems, but not solve them."

"Confront uncertainty. Once we free ourselves from the illusion that science or technology (lavishly funded) can provide a solution to resource or conservation problems, appropriate action becomes possible."

The human element is an important component of coastal ecosystem functions, and must be integrated in planning for the development of coastal zones. Ecological economics brings together ecology and human societies (how they function and their economic systems). The coastal zone manager must understand the principles of ecological economics against the background of the free market paradigms and the valuation of ecological resources.

Training programmes for ICAM managers should draw from the following disciplines, among others:

- Systems ecology
- Resource economics
- Environmental engineering
- Landscape planning

CULTURAL LITERACY

The problems that confront coastal managers are not only technical issues requiring technical solutions. Socio-cultural factors generate many problems which the coastal zone manager cannot ignore. Many of these stem from the delicate balance that exists between resource exploitation and the sustainable use of resources-a trade off between short and long term gains.

Tradition and culture play an important role in how societies use and value resources. The coastal zone manager cannot be an effective practitioner unless he is "culturally literate".

Cultural literacy involves the ability to understand the traditions, values, attitudes and world view of a people, and the ability to function within a culture. Behavioural changes can only be effected if cultural knowledge is incorporated into the design and administration of coastal zone management programmes.

MODULE 4

SUSTAINABLE TOURISM PRACTICES AND THE APPLICATION OF ICAM TO THE TOURISM INDUSTRY

SUSTAINABLE TOURISM PRACTICES AND THE APPLICATION OF ICAM TO THE TOURISM INDUSTRY

OBJECTIVES:

- To reinforce ICAM Concept and Principles outlined in Module III
- To explain the concept of Voluntary Sustainable Practice; Sustainable Tourism and Agenda 21
- To examine the role of public and private sectors in sustainable development practices
- To offer detailed guidelines to tourism management-related activities

OVERVIEW:

- Defines sustainable development as outlined at the UNCED Conference, 1992
- Outlines mandate of AGENDA 21 and its Programme of Action for the Travel and Tourism Industry
- Indentifies and outlines key action areas related to sustainability within the tourism sector that should be addressed by both public and private sectors
- Presents conservation and environmental programmes in the tourism industry with a focus on training and public awareness, institutional strengthening and greening operations

PROTECTING THE MARINE ENVIRONMENT

The duty of protecting the marine environment from land-based activities has been placed in the context of sustainable development by the United Nations Conference on Environment and Development (UNCED) (1992). The following necessary agreements were made:

- To apply preventive, precautionary approaches so as to avoid degradation of the marine environment, as well as to reduce the risk of long term or irreversible adverse effects upon it.
- To ensure prior assessment of activities that may have significant adverse impacts upon the marine environment.
- To integrate protection of the marine environment into relevant general environmental, social and economic development policies.
- To develop economic incentives, where appropriate, to apply clean technologies and other means consistent with the internalization of environmental costs, such as the 'Polluter Pays Principle,' so as to avoid degradation of the marine environment.
- To improve the living standards of coastal populations, particularly in developing countries, so as to contribute to reducing the degradation of the coastal and marine environment.

WHAT IS A VOLUNTARY SUSTAINABLE PRACTICE?

Voluntary sustainable practice is a system which should lead to continuous improvements in environmental performance. There are several advantages to adopting voluntary sustainable practices. Four of these are:

- they are cost effective
- they might also be identified as an effective alternative to regulations
- they will guarantee the life of the sector, by protecting its most important input, the environment
- they will improve the performance and image of the company and of the sector as a whole

SUSTAINABLE TOURISM AND AGENDA 21

The General Assembly of the United Nations called for 'A global Agenda for Change' to be formulated by the World Commission on Environment and Development. The Commission was chaired by Gro Harlem Bruntland and is called the Bruntland Commission.

According to the Brundtland Commission, sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Agenda 21:

- is a comprehensive programme of action adopted by 182 governments at the United Nations Conference on Environment and Development (UNCED), at the Earth Summit, in Rio de Janero on 14 June 1992.

- Provides a blue print for securing the sustainable future of the planet, from now into the twenty-first century. It identifies the environmental and developmental issues which threaten to bring about economic and ecological catastrophe and presents a strategy for transition to more sustainable development practices.
- is a strategic plan of action to ensure that future generations have a chance of survival. Responsibility for its implementation includes both the public and the private sector. The burden is placed on the governments but many partnerships need to be brokered to complete this task. For it to be successful, the ultimate aim is a global partnership which heightens awareness of environmental and developmental issues within all sectors of the economy.

The World Travel and Tourism Council (WTTC) has translated Agenda 21 into a Programme of Action for the travel & tourism industry. The Programme of Action was developed to protect the natural and cultural resources which form the core of its business. Sustainable tourism depends to a large extent on partnerships between government, industry and other organizations.

The priority areas identified in the Programme of Action for the travel and tourism industry, targeted for Government departments, national tourism administrations and representatives of trade organizations are:

- assessing the capacity of the existing regulatory, economic, and voluntary framework to bring about sustainable tourism
- assessing the economic, social, cultural, and environmental implications of the organization's operations
- training, education, and public awareness
- planning for sustainable tourism development
- facilitating exchange of information, skills, and technology relating to sustainable tourism between developed and developing countries
- providing for the participation of all sectors of society
- design of new tourism products with sustainability at their core
- measuring progress in achieving sustainable development
- design for sustainability
- partnerships for sustainable development

The priority areas for companies are:

- waste minimization, reuse and recycling
- energy efficiency, conservation and management
- management of fresh water resources
- waste water management
- hazardous substances
- Transport

- land-use planning and management
- involving staff, customers, and communities in environmental issues
- design for sustainability
- partnerships for sustainable development

The Programme of action for the travel & tourism industry identifies three core tools which can be used by governments to achieve its objectives. These are:

- introduction of new or strengthening of existing regulation to ensure the protection of human health and the environment.
- use of free market mechanisms by which the price of goods and services should increasingly reflect the environmental costs of resource inputs, manufacture, use, recycling, and disposal subject to country-specific conditions; (in developing countries these tools are expected to yield improvements in the areas of waste minimization, water management and energy management in developed countries it could lead to increases in the price of some services).
- industry-led voluntary-led programmes, which aim to ensure responsible and ethical management of products and processes for health and environmental aspects; the intention is to integrate environmental considerations into all elements of business planning and decision-making, fostering openness and dialogue with employees and the public.

TRAVEL & TOURISM: LEADING THE WAY

Travel and Tourism are the largest industries in the world and the largest foreign exchange earner. This suggests that tourism has the moral responsibility to take the lead in making the transition to sustainable development. It also has a vested interest in doing so.

The basis of the sector rests squarely on clean seas, pristine mountain slopes, unpolluted, litter-free streets, well-preserved buildings, archaeological sites, and diverse cultural traditions. Recently emphasis has been placed on specialty, nature-oriented and low-capacity tourism. Eco-tourism spans only a very small portion of the market. Real benefits lie in making all travel and tourism sustainable.

> Agenda 21 specifies actions that industry can take to bring about sustainable development and ways in which governments can facilitate this process.

Agenda 21 specifies actions that industry can take to bring about sustainable development and ways in which governments can facilitate this process. The WTTC translates Agenda 21 into an action programme for the travel and tourism industry.

It is expected that if these issues are addressed, travel and tourism will:

- create economic value for natural resources
- provide incentives and means for environmental enhancement of areas such as city centres and old industrial sites, including the creation of employment in these areas

- stimulate economic activities centered around infrastructure improvements such as water treatment plants
- research and develop environmentally sound technology and techniques including technology transfer between countries
- use communication opportunities with customers and host communities to pass on the messages and practices of sustainable development
- provide an opportunity for environmentally sound growth alternatives for developing countries which will lead to sustainable development patterns
- lead other industries in the adoption of business practices that contribute to sustainable development by asking suppliers to provide environmentally benign products and exchanging information and ideas on sound environmental management

The overall aim is to establish systems and procedures to incorporate sustainable development considerations at the core of the decision making process and to identify actions necessary to bring sustainable tourism development into being. Sustainability is a long-term process, and its foundations must be laid immediately.

Before any of the objectives can be achieved, an overall framework or plan for sustainable tourism programme must be developed, discussed and agreed to. The aim of the plan is to establish procedure to incorporate sustainable development considerations into all decisions made by the organization. The priority areas and objectives can then be approached within the context of the overall framework.

The following steps are necessary to incorporate sustainable development concepts into decision-making:

- Secure the commitment of top management to the concept of sustainability.
- Communicate to all staff the intention to develop a sustainable tourism programme and the objective of such a programme.
- Assess the environmental, economic, social and cultural impacts of tourism in the region.
- Prioritize areas for action, focusing on the priority areas identified by Agenda 21.

For each priority area, the steps will be to:

- Establish realistic achievable targets for each area measurable.
- Designate the principal organizations responsible for achieving each target specified and the partnership that will be needed.
- Implement action programmes.
- Monitor progress by comparing actual performance targets.
- Report internally and externally (clients).

The process of setting, monitoring and resetting targets will be continuous. As more countries develop sustainable tourism programmes, targets may be based on international comparison.

THE PUBLIC SECTOR

Priority One

Assessing the capacity of the existing regulatory, economic, and voluntary framework to bring about sustainable tourism.

The objective is to assess current regulatory, economic and voluntary provision for sustainable tourism and to develop or advise on the development of policies that will facilitate the achievement of sustainable tourism. For example, building regulations, planning laws, health and safety regulations. Where none exists it will be necessary to access both the minimum standards desirable and the policing measures required to enforce them.

Government departments, national tourism administrations and trade organizations will need to:

- Assess the adequacy of the current regulatory (international and national) and voluntary framework for achieving the aims specified in the overall programme for sustainable tourism. If there is conflict over any of these special attention will be needed to overcome this.
- Develop partnerships with the relevant authorities and the Travel & Tourism industry to assess the best range of regulatory, economic and voluntary instruments to bring about sustainability and the most appropriate circumstances for each or combinations of mechanisms.
- Use economic instruments to set true cost of goods sold, provide cost benefit analyses to companies wishing to implement waste minimization procedures reflect the real cost of energy take precautionary measures in handling hazardous waste.
- Assess incentives to result in good environmental practices.
- Encourage industry codes of practice in preference to regulation.
- Establish a sustainable tourism panel to facilitate the development of partnerships with all stakeholders.

Priority Two

Assessing the economic, social, cultural and environmental implications of the organization's operation

The objective is to examine the internal operations of the organization in order to assess the implications of its own activities for sustainable development.

A complete review of the economic, social, cultural and environmental impacts of its operation and where necessary development of a corrective action plan to:

- maximize use of resources e.g., water and energy.
- treat waste water prior to discharge. Where possible recycle and reuse.

- minimize waste generation - through purchase and proper disposal.
- encourage staff to walk to work or car pool
- adopt equal employment strategies
- communicate environmental messages to internal and external clients
- ensure the organization marketing is a true representation of the targets seeked. Advise clients on how they can help conserve its unique environmental and cultural qualities.

Priority Three

Training, education, and public awareness

The objective is to educate all stakeholders in travel & tourism about the need to develop more sustainable forms of tourism and to provide them with the necessary skills to carry out task in this respect.

Training and educating the current managers is a fundamental step towards achieving Agenda 21.

Some of the key steps involved are outlined below:

- working with government departments responsible for education. The purpose is to get environmental and sustainable development message included in school courses especially higher education courses tourism.
- work with companies to form training networks to help smaller entities.
- work with travel and tourism companies and organizations to provide appropriate management skills to those in the industry.
- encourage companies to spread the message of sustainability to customers, communities and suppliers.
- work with the industry to develop in-service courses leading to recognized qualifications in environmental management in travel and tourism.

Priority Four

Planning for sustainable tourism development

The objective is to develop and implement effective land-use planning measures that maximize the potential environmental and economic benefits of travel and tourism while minimizing potential environmental and cultural damage.

Organizations should:

- work with local and regional planning authorities
- advise local authorities on the components of a sustainable tourism destination by providing guidance
- guide tourism development in particularly sensitive or protected areas
- ensure that planning regulations, measures or guidelines are implementable and capable of being effectively policed through voluntary and regulatory means

- help local and regional authorities to assess destination "capacity" as regards the availability of critical resources (including culture)
- in the area of transport: develop and promote cost-effective, efficient, less polluting transport systems
- work with local authorities and companies to ensure efficient operation of public transport and maintenance of transport infrastructure
- work with government departments, communities, and travel and tourism companies to provide safe cycle ways and footpaths for tourist and resident use and to implement other measures to reduce the need to use private motor vehicles for travel to and within the holiday destination
- devote attention to efficient transport management, especially as regards air and road transport
- integrate land-use and transport planning to reduce transport demand
- ensure that tourism and coastal development are complementary rather than conflicting
- use tourism as a tool for socio-economic development and environmental protection in sensitive areas such as coastal zones, etc.

Priority Five

Facilitating exchange of information, skills, and technology relating to sustainable tourism between developed and developing countries

The objective is to communicate the lessons of sustainable tourism between developed and developing nations. This can be achieved in the following ways:

- host seminars and practical workshops on environmental responsibility for other government departments, NTAs and trade organizations.
- advise developing countries on sources of funding and grant aid for the design and development of sustainable tourism programmes

Priority Six

Providing for the participation of ALL sectors of society

The objective is to ensure that all sectors of society, including women, indigenous peoples, the young and the old, are given an opportunity to participate in sustainable tourism development. This can be done by:

- promoting the participation of communities, women and indigenous people in tourism
- Ensuring access of these people to training and promotion opportunities as appropriate
- providing advice to regional authorities on working with local communities.

Priority Seven

Design of new tourism products with sustainability at their core

The objective is to develop partnerships with the relevant members of the travel & tourism industry and local authorities to ensure that new tourism products are designed to be sustainable at various levels - economically, socially, culturally and environmentally.

Sustainable tourism destinations will only come into being when all products are designed with environmental, cultural, and socio-economic criteria in mind

Tourism departments and trade organizations can help to ensure that all tourism products are sustainable by taking the following steps:

- planning authorities must define components of a sustainable resort in their area of jurisdiction.
- develop and implement environmental impact assessment procedure.
- ensure that new development include appropriate provisions for energy, water, waste water, and waste. Ensure that the requirements are included in the building regulations.
- develop alternative sources of fresh water or systems to recycle water in tourism areas where fresh water is scarce, and work with relevant bodies to provide water.
- ensure that materials and finishes employed in tourism developments do not harm health or the environment.
- ensure labor-intensive technologies are employed in construction so as to create employment, especially in areas of high unemployment.
- ensure that tourist facilities are built to withstand natural disorders such as storms, flooding, earthquakes, and landslides.
- help developers keep abreast of "cleaner" technology by work with specialists in this area.
- products by adopting or developing appropriate and meaningful green labels.
- encourage low-impact forest use.
- conserve mountain habitats.
- use carefully managed tourism as a tool for the protection of coastal zone.
- encourage partnerships between agriculture and tourism to safeguard productivity.
- use tourism as a tool to regenerate urban or industrial environments.

Priority Eight

Measuring progress in achieving sustainable development

The objective is to establish realistic indicators of sustainable tourism development, applicable at local and national levels, from which progress can be monitored and assessed. Module 4 - Table 1 provides an example of steps in devising environmental indicators.

Module 4 - Table 1

A step-wise approach to develop a set of environmental indicators to access the environmental quality of and pressures on the caribbean costal zone

STEP	ACTIVITY
1.	Identification of possible environmental issues and a first **selection of issues** based on their relevance for Caribbean coastal zone policy.
2.	Identification of cause and effect relations in terms of driving forces (human activities), pressure, state and impact for selected issues; **choice of pressure and state indicators.**
3.	Specification of **coastal spacial units** (pre aggregation step units) for the identified pressure indicators.
4.	Identification of pre aggregation methodologies per issue and indicators of **data reqiurements.**
5.	Assessment of the environmental conditions **(state)** and **pressures.**
6.	Vulnerability assessment of **coastal zone types** to environmental effects.
7.	Identification of **threats** and major pressures.

Measurement indicators for sustainable tourism can be established as outlined below:

- consider how available data may be used to assess progress towards sustainable tourism.
- work with the World Trade Organisation (WTO) to develop a key set of indicators which can be used by local and national authorities.
- exchange experience and indicators with other organizations.

Priority Nine

Partnerships for sustainable development

The objective is to develop partnerships to facilitate responsible entrepreneurship:

- develop a strong partnership between the public entities and the environment
- develop and maintain consistent policies as they relate to tourism
- facilitate information exchange
- recommend/introduce incentives and awareness-creation measures to assist the industry to adopt more sustainable procedures
- encourage responsible entrepreneurship
- encourage all branches of the industry to train people in environmental management
- work with government to ensure that necessary infrastructure is in place to facilitate sustainable development
- assist the industry to adopt suitable targets for energy and materials use reduction, waste minimization, fresh water resource management, and waste water management and to achieve them consistently.

PRIVATE SECTOR

Every company within the industry should be able to actively participate, and sustainable tourism should result in a change in the way that business is conducted throughout the industry.

The steps for setting up an environmental management process are as follows:

- statement of company's commitment to the criteria of sustainability.
- an assessment of the impacts of the business on the environment and local development.
- involvement of staff and designation of an individual as responsible for environmental activities.
- the development and publication of an environmental policy (either stand-alone or as a part of the mission statement)
- identification of overall objectives for the environmental programme.
- definition of priority areas for action; this should focus on the priority areas identified by Agenda 21 and outlined in the sections that follow:

  - prepare the ground by communicating objectives to staff
  - measure current performance
  - develop plans for improvement
  - set targets
  - implement action programmes
  - monitor results

It is important to establish reporting procedures for the environmental programme to communicate results within the company, and to communicate results to stakeholders.

Priority One

Waste minimization, reuse & recycling

The objective is to minimize resource inputs, maximize product quality, and minimize waste outputs.

Action areas

- reduce waste burden by selecting products that have minimal waste implications
- select suppliers who agree to minimize the waste implications -- reuse non-essential packaging
- reuse products
- recycle where reduction and reuse is not possible or where more environmentally sound waste disposal routes are not appropriate
- dispose of unavoidable wastes responsibility
- encourage staff to employ the principles of waste minimization at home
- work with governments and other authorities to establish labeling schemes which provide realistic environmental achievements
- open recycling or disposal facilities to employees and local communities to improve destination quality.

Priority Two

Energy efficiency, conservation & management

The objective is to reduce energy use and reduce potentially damaging atmospheric emissions.

Action areas

- implement programmes to reduce energy wastage; a simple measure such as switching off equipment when not in use can bring substantial financial and environmental benefits as the first step in an energy management programme
- research alternative, environmentally benign methods of energy generation, such as solar, wind or biomass power
- develop, use and disseminate energy-saving technology
- integrate energy efficiency considerations into new developments
- training staff about the environmental initiatives to save energy.

Priority Three

Management of fresh water resources

The objective is to protect the quality of water resources and to use existing resources efficiently and equitably, Tourists use tens more water per person than the local community. Effective management of water use can cut utility use significantly and help communities to make more effective use of existing resources, minimising water use and protecting the quality of reserves.

Action areas

- take all possible measures to protect the quality of fresh water reserves and establish appropriate energy procedures, should reserves be under threat

- provide fresh water facilities for use by local communities in communal areas or pay for water infrastructure to be installed to serve the needs of both tourists and local communities
- minimize wastage of water by undertaking regular maintenance checks
- work with customers to reduce water demand. Place notices explaining to guest the importance of conserving water is just one example of a commonly used and effective initiative
- utilize water-saving devices to reduce water consumption while maintaining service quality
- plant drought-resistant species in landscaped areas
- develop appropriate environmental impact and design criteria to ensure that water conservation is a key element of new projects
- reuse and recycle water
- encourage staff and customers to incorporate components of the water management programme into daily procedures at home.

Priority Four

Waste water management

The objective is to minimise waste water outputs in order to protect the aquatic environment, to safeguard flora and fauna, and to conserve and protect the quality of resources.

Action areas

- use waste water treatment facilities
- establish where necessary waste water facilities
- establish catchment pools to eliminate the entry of chemicals into the water system
- establish programmes with staff, tourists, and communities to clean up degraded aquatic environments
- establish emergency procedures to ensure that the aquatic environment is protected
- avoid products containing hazardous substances
- dispose of waste water responsibly

Priority Five

Hazardous substances

The objective is to replace products containing potentially hazardous substances with more environmentally benign products.

Action areas

- examine the necessity for use of products containing potentially hazardous substances
- assess the full environmental and financial implications of new products prior to purchase
- where necessary form partnerships with governments and manufacturer to produce benign substances
- dispose of any unavoidable waste responsibly

- set up inventories and storage procedures to guard against theft/accidents
- train all staff in the handling of such substances
- operate an open door policy with regards for communities and staff with regard to these substances.

Priority Six

Transport

The objective is to reduce or control harmful emissions into the atmosphere and other environmental effects of transport. This area of operations can result in high financial cost for the industry if ignored.

Action areas

- use a well-maintained and modern transport technology e.g. airlines
- encourage car pools, walk to work or bicycle programmes and work with planning authority to ensure that drop off points are well located
- work with suppliers to ensure that purchase are not delivered at peak times (congestion contributes to emissions) and that deliveries are fully loaded
- promote buy local campaigns
- work with government on an effect transportation policy consider transport as a part of development plans operate demand management to reduce the need for polluting modes of transport in favour o f less polluting modes and activities

Priority Seven

Land-use planning and management

The objective is to deal with the multiple demands on land in an equitable manner, ensuring that development is not visually intrusive and contributes to conserving environment and culture while generating income.

Overall destination quality is likely to be affected by poor management decisions, whether these are taken by tourism industry or other industries.

Action areas

- asses the potential environmental, cultural, social and economic impacts of new development
- take steps to avoid negative impacts and to minimize unavoidable impacts
- monitor the impacts of all process and procedures
- use local materials and labour when constructing new facilities. (Verify the source of goods)
- Employ technologies and material appropriate to local conditions in new developments and refurbishment
- work with planning authorities to establish adequate physical infrastructure and use of natural talents and resources (physical and human), including to the craft industry
- involve the local community in major development decisions

- consider carrying capacity and resource restraints when developing new products, especially in small islands
- work with other sectors to ensure balanced and complementary development patterns

Priority Eight

Involving staff, customers and communities in environmental issues

The objective is to protect and incorporate the interests of communities in developments and to encourage that the environmental lessons learnt by staff, customers and communities and put into practice in their homes.

Action areas

- listen to the host communities, and your staff
- provide economic outlets for local trades people
- discuss development plans and opportunities with local communities
- tell communities about the risks and environmental benefits of the business
- make sure all eligible members of the community have employment and promote employment opportunities within the company to raise public awareness
- provide specialized training to staff in key positions
- tell customers about your company's environmental initiatives
- work with local schools and colleges to integrate environmental issues into primary and vocational education
- encourage or sponsor training for community members to enable them to participate in the environment and development process
- involve employees' families in environmental activities and events
- offer training opportunities to other businesses in the area

Priority Nine

Design for sustainability

The objective is to ensure that new technologies and products are designed to be less polluting, more efficient socially and culturally appropriate, and available worldwide.

Action areas

- develop company wide sustainable development policies
- increase research and development
- collect, analyse and exchange information on the relationship between transport and the environment
- provide information and support to schools and colleges about environmental issues to help building up institutional, scientific, planning and management capacities
- prepare adequately for natural disasters by designing and building appropriate structures
- establish international standards, where appropriate, as benchmarks

Priority Ten

Partnerships for sustainable development

The objective is to form partnerships to bring about long-term sustainability so that action by does not to jeopardize the future of many.

Action areas

- contribute to the economic well-being of communities
- foster dialogue between industry to arrive at joint solutions to problems
- work with small and medium-sized enterprises to exchange management skills, market development, and technological know-how, especially as regards the application of cleaner technology
- work with governments to establish an enabling framework for the achievement of sustainable development
- promote interaction between host communities and tourist. This increases understanding of cultures
- incorporate the concerns of communities, especially indigenous communities, in the planning process so that they effectively participate in sustainable development
- review on a continuous basis as international agreements and protocols with a view to understanding the conditions and implications on each business in the sector.

MANAGEMENT RELATED ACTIVITIES

Preparation and implementation of land and water use and siting policies.

- Environmental impact assessment, systematic observation and follow-up.
- Contingency plans for human induced and natural disasters.
- Improvement of coastal human settlements.
- Conservation and restoration of altered critical habitats.
- Integration of sectoral programmes.
- Human resource development and training.
- Implementation of integrated plans and programmes at appropriate levels.
- Public education, awareness and information programmes.
- Sound technology and sustainable practices.
- Environmental quality criteria.
- Conservation and environmental management programmes in the tourism industry

CONSERVATION AND ENVIRONMENTAL MANAGEMENT PROGRAMMES IN THE TOURISM INDUSTRY

Within the Caribbean region there are several organizations and institutions which have been established to address the issues of environmental management and sustainable development. Some of these have been in existence for many years while some have been established more recently. These organizations and institutions may be independent or be a part of an academic institution, a government agency or a non-governmental organization. The programmes developed by the these bodies may be targeted at the national level or the regional level and

may receive guidelines or co-operation through global initiatives. A list of some of these key institutions and organizations in the region are given in Appendix 3. Specifically relating to conservation and environmental management in the tourism industry these institutions and organizations may include in their mandate the following issues:

- Water conservation
- Solid waste reduction
- Operation and maintenance of waste-water treatment plants
- Establishment of an environmental rating scheme for hotels
- Strengthening of environmental health at ports of entry
- Guidelines for vector control using integrated pest management
- Preparation of energy plans and adequate design and building for natural disasters

Training and Public Awareness

Aspects of training and public awareness include:

- Increasing the awareness of the environment in the hotel sector
- Development and implementation of training programmes in environmental health and tourism planning
- Awareness programmes for the public

Institutional Strengthening

Aspects of institutional strengthening include:

- Environmental health and tourism data bank
- Strengthening of the public health inspectorate
- Environmental health guidelines for sustainable tourism development.

The green hotel as good business

The green hotel should create positive benefits to any investor. These include:

- Protecting the investment
- Enhancing the investor's image
- Saving planet earth
- Protecting resources by
  - improving and managing coastal water quality
  - developing beach management programmes
  - developing landscaping programmes to enhance your environmental image
  - evaluating and improving sewage treatment facilities
  - designing wastewater treatment programmes
  - improving the management of solid waste disposal systems
  - evaluating the use and disposal of chemicals at your hotel
  - implementation of energy efficient practices
  - developing disaster management strategies.

MODULE 5

PROGRAMMES IN INTEGRATED COASTAL AREA MANAGEMENT (ICAM)

PROGRAMMES IN INTEGRATED COASTAL AREA MANAGEMENT

OBJECTIVES:

- To outline the Global Programme of Action for ICAM
- To give guidelines on the development and implementation of ICAM Programmes

OVERVIEW:

- Defines Global Programme of Action for ICAM
- Outlines steps for integrating Programme of Action within the framework of ICAM
- Lists critical areas of concern for which a Programme of Action should be developed
- Details programme support elements including long-term national objectives
- Presents a model for implementation of phases of the ICAM Programme

THE GLOBAL PROGRAMME OF ACTION

The Global Programme of Action (GPA) for the Protection of the Marine Environment from land based activities is the result of an Intergovernmental conference held in Washington, D. C. In 1995 (UNEP,1995). The GPA is geared towards preventing degradation of the marine environment from land-based activities.

> Agenda 21 makes the link between actions to combat marine degradation caused by land-based activities and actions which address the specific problems of small island developing states

It was designed to give conceptual and practical guidance to national and/or regional authorities in devising and implementing sustained action to prevent, reduce control and/or eliminate marine degradation .

Effective implementation of this Programme of Action is a crucial and essential step forward in the protection of the marine environment and will promote the objectives and goals of sustainable development, including sound tourism development.

Agenda 21 makes the link between actions to combat marine degradation caused by land-based activities and actions which address the specific problems of small island developing states. At the Conference on Sustainable Development of Small Island Developing States (SIDS), in Barbados in 1994, many states of the Wider Caribbean Region agreed to implement the provisions of the priority areas of the Programme of Action.

The Global Programme of Action reflects the fact that states face a growing number of commitments and challenges in achieving improved environmental performance. Its implementation will require new approaches by, and new forms of collaboration among governments, organizations and institutions with responsibilities and expertise relevant to marine and coastal areas, at all levels - national, regional and global. The implementation of ICAM programmes of the Wider Caribbean Regions incorporating the issues and needs for the sustainable development of tourism would be significant contributions to the delivery of the Global Programme of Action.

Once implemented, these programmes should contribute to maintaining and restoring the productive capacity and biodiversity of the marine environment to ensure the protection of human health and the conservation and sustainable use of marine living resources.

Development of comprehensive, continuing and adaptive programmes of action within the framework of **Integrated Coastal Area Management** which are relevant to tourism should include provisions for:

- Identification and assessment of problems.
- Establishment of priorities.
- Setting management objectives for priority problems.
- Identification, evaluation and selection of strategies and measures including management approaches.
- Establishment of criteria for evaluating the effectiveness of strategies and programmes.

Actions

The effective development and implementation of national programmes of action should focus on sustainable, pragmatic and integrated environmental management approaches and processes, such as Integrated Coastal Area Management harmonized as appropriate with river basin management and land-use plans.

Areas of Concern (areas that are affected or vulnerable)

- Critical habitats, including coral reefs, wetlands, seagrass beds, coastal lagoons and mangrove forests.
- Habitats of endangered species.
- Ecosystem components, including spawning areas, nursery areas, feeding grounds and adult areas.
- Shorelines.
- Coastal watersheds.
- Estuaries and their drainage basins.
- Special marine and coastal areas.
- Small islands.

Establishment of Priorities

Priorities for action should be established by assessing the factors described above and should specifically reflect:

- The relative importance of impacts upon food security, public healthy, coastal and marine resources, ecosystem health and socio-economic benefits, including cultural values, in relation to:
- Source-categories (contaminants, physical alteration and other forms of degradation and the source of practice from which they emanate)
- The area affected including its uses and the importance of its ecological characteristics.
- The costs, benefits and feasibility of options for action including the long=term cost of no action.

In the process of establishing priorities for action and throughout all stages of developing and implementing national programmes of action, states should:

- Apply **Integrated Castal Area Management** approaches, including provision to involve stakeholders, in particular local authorities and communities and relevant social and economic sectors, including non-governmental organizations, women, indigenous people and other groups.
- Recognize the basic linkages between the freshwater and marine environments through, inter alia, application of watershed management approaches.
- Recognize the basic linkages between sustainable management of coastal and marine resources, poverty alleviation and protection of the marine environment.
- Apply environmental impact assessment procedures in assessing options.
- Take into account the need to view such programmes as an integrated part of existing or future comprehensive environmental programmes.
- Take steps to protect: (i) critical habitats, using community-based participatory approaches that are consistent with current approaches to conservation and uses compatible with sustainable development; and (ii) endangered species.

- Integrate national action with any relevant regional and global priorities, programmes and strategies.
- Establish focal points to facilitate regional and international co-operation.
- Apply the precautionary approach and the principle of inter-generational equity.

Programme Support Elements

The long-term objective of national programmes of action should be to develop integrated strategies and programmes to address all action priorities in relation to impacts upon the marine environment from land-based activities, which may also include tourism activities .

In addition, the programmes of action must themselves be integrated with overall national objectives and other relevant programmes in relation to sustainable development.

States therefore should seek to ensure that there are administrative and management structures necessary to support national programmes of action. These include as appropriate:

- Organizational arrangements to co-ordinate among sectors and sectoral institutions.
- Legal and enforcement mechanisms (e.g. need for new legislation).
- Financial mechanisms (including innovative approaches to provide continuing and predictable programme funding).
- Means of identifying and pursuing research and monitoring requirements in support of the programme.
- Contingency planning.
- Human resources development and education.
- Public participation and awareness (e.g. based on integrated coastal area management principles).

Funding the Programmes

National and regional programmes should ensure that there is a balance between the projects to be undertaken in implementing national and regional priorities and the sources and mechanics for financial resources as necessary. The mix of the various possibilities that will be appropriate will vary from country to country.

The pattern of funding will have to be determined in accordance with the decisions on individual projects. Further, countries in need of assistance may help in capacity-building for:

- the development of national programmes of action
- preparation of national assessments on each source-category
- identification of the national plans

DEVELOPMENT AND IMPLEMENTATION OF ICAM PROGRAMMES

This model for developing and implementing ICAM programmes is a prototype approach which may be difficult for many countries to fully emulate. Nevertheless, these preliminary guidelines for countries in the Wider Caribbean Region are intended to improve existing coastal area management programmes, but it is

Recognized that not all steps must be followed exactly as presented. The four-phase process suggested by UNEP (1996) is outlined below. Each phase is presented in detail in the four sub-sections which follow.

Considering the importance of the tourism industry in the Wider Caribbean Region, it is vital that greater participation of the sector take place in the planning and management of coastal areas.

Phase 1 Programme Initiation

During this phase focus is set, issues reviewed, goals and objectives established; and preliminary planning and organizing efforts are put in motion.

Phase 2 Resource Characterization and Problem Definition

A number of parallel investigations are carried out which determine what problems should be addressed including the actions required.

Phase 3 Programme planning

A coastal management plan and related planning tools should be assembled.

Phase 4 Plan Implementation

This involves ongoing provisions for programme evaluation and modification.

Phase 1: Programme Initiation

There is a general agreement among coastal area programme specialists that there is no unique best scenario for the start-up and implementation of a new coastal area management programme, integrated or otherwise. In several cases, studies done before World Coast 1993, the International Conference on Coastal Zone Management held in the Netherlands, it was evident that a wide variety of successful programme initiatives exist but that they differ widely. In fact, it was "...evident that the most important lesson to be learned about Integrated Coastal Zone Management (ICZM) arose from the differences between successful approaches" (Awosika, et al., 1993).

This is, of course, a favourable finding as it suggests a broad set of tactical options, tools and approaches that the would-be coastal programme planner can choose from, selecting those that appear best suited to local conditions and circumstances. However, this also suggests the need for a pre-project preview of what has worked elsewhere and under what specific conditions comparable to those prevailing locally.

The development of the idea for improved coastal area management in a country by persuading the country to restructure itself in light of a new integrated approach is a relatively easy task. Less easy is the development of the idea inside the government structure. There are essential prerequisites which include:

- Selecting and legitimizing the initial leadership team.
- Arrangement of institutional (organizational) support.
- Establishment of government's formal approval.
- Development of a stakeholders' strategy.

- Development of a public awareness strategy.

An ICAM Steering Committee may be established from an initial leadership team and may be formally or informally constituted. The leadership team needs to have broad expert representation from government, tourism industry, academia, fisheries, selected coastal communities and user-group institutions, the port authority and national, local or regional planning units.

Under the Steering Committee a Planning Team should be established in order to facilitate co-ordination for planning. Supporting institutional arrangements should be put in place through quasi- and non-governmental institutions, such as marine and coastal research facilities, academies of science, and university marine science and engineering units. These institutions have the expertise, the information base and the flexibility to make significant contributions to ICAM planning. Government involvement depends on the extent of the perception of government control over decisions about non-private resources, the extent of involvement in promoting and supporting marine and coastal research institutions and programmes and the extent to which leaders can be identified who are already active users of the coastal zone. Coastal area stakeholders have a strong interest in the viability of the coastal zone and stakeholders who are most likely to be affected by government policies should play the most significant role in their formulation and implementation. Other aspects that need to be considered are the areas of public support, definition of goals, strategic planning and data management.

Phase 2: Resource Characterization and Problem Definition

An ICAM action programme should consist of objectives aimed at reducing or preventing certain stresses in the coastal zone. This phase should be aimed at gathering information to determine which problems will be addressed and what actions are needed. The first category of information gathering requires that technical and scientific characterization be done which involves surveying the existing coastal ecosystem for determination of current and projected state of environmental health. Management characterization is the second category of information needs and involves institutional inventory and management assessment.

Phase 3: Programme Planning

In the Programme Planning Phase several aspects have to be taken into account. These include the formulation of the concept of ICAM, development of an interdisciplinary group (the Team) which will be charged with formulating the plan, selection of a working agenda which delivers: a formal ICAM Plan and supplemental management plans, continued data collection pertinent to the planning task, assessment of Geographic Information System (GIS) needs, interagency co-ordinating mechanisms, regulatory instruments and monitoring, designing institutional arrangements, planning and management boundaries, case studies and pilot/demonstration projects and revision of goals and objectives.

Phase 4: Plan Implementation

Implementation of the Management Plan involves several elements, involving government and non-governmental organizations, private sector and community groups. Monitoring of the plan, may include technical aspects such as ongoing plan evaluation, audits and redesign, as well as recommendations and reports. Administration elements of ICAM implementation must be considered in this phase and they include financing, work plans, training and evaluation.

Intersectorial strategies should be considered such as pollution control, land use planning, environmental assessment and audit, conservation issues as well as training and education. Monitoring is aimed at establishing the necessary flow of information on decisions, actions, and investments as they relate to the implementation of ICAM. Monitoring can take the form of on-going routine observations, compliance or surveillance monitoring, structure monitoring or programme monitoring. Enforcement is a sensitive area that can have major impacts on implementation if not conducted properly. Several levels of enforcement are possible and education an outreach initiatives may be best implemented before punitive or legal actions are taken.

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APPENDIX 1
COURSE EVALUATION

After any form of training course, it is important to determine the relevance and success of the course. The main reasons for doing this are to determine:

- the usefulness of the course to the participants
- the relevance of the content of the course to participants' work
- the adequacy of the level of organization
- the comfort of the facilities
- the clarity of audio-visual material
- the accuracy of the information , and
- the quality of presentations and preparedness of the speakers
- in terms of their relative expertise

A course evaluation will help determine whether the course was as useful as was expected by the organizers, and if not, will assist in improving on future courses by addressing particular issues that were reflected on negatively by the participants.

Course evaluation sheets are best presented at the beginning of the workshop with the introductory material so that participants have time to read it through and answer questions or make notes as the workshop proceeds. It is best to arrange a box or file for the participants to leave their questionnaires at the end of the workshop, rather than requesting that they be sent by mail or fax on a later date. Participants should be given the option of signing or completing evaluations anonymously.

The design of the evaluation sheet should be simple and straight forward with direct questions that require straight forward answers. The questions should be designed so that answers can be:

1. yes or no
2. not applicable (N/A)
3. on a scale of 1 through to 5, with 1 being the lowest score
4. on a range of opinions - strongly agree, agree, disagree, strongly disagree
5. too short, just right, too long

The questionnaire can be designed to ask all types of questions which gives answers in all or some of the categories above. The type of response presented is dependent on the type of question asked and how much information you as the questionnaire evaluator requires.

For example the phrase '**The course length was appropriate**' is best served by the answer

1. Too long 2. Too short 3. Just right

rather than

1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

At the end of the questionnaire it is useful to leave at least one-half a page for participants to write their own input which can be requested as:

- Comments
- Observations, or
- Suggestions

If an assessment of presenters is necessary for your feedback this can be included and the presenters can be identified by:

- name
- topic
- time slot

An example of how the questionnaire or evaluation sheet can be organized, and examples of types of question is given below:

Section 1: Logistics

The advanced mailing gave adequate information to the participants:
1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

Section 2: Course content

The course was well organized
1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

The stated objectives were met
1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

Section 3: General Overview

How valuable did you find the course?
1 2 3 4 5

The presentations were
1. Too long 2. The right length 3. Too short

Section 4: Results

Did the course provide solutions to existing problems?
1 2 3 4 5

Was the schedule of activities clear?
1 2 3 4 5

Section 5: Scheduling facilities

The time of year selected was appropriate
1 2 3 4 5

The refreshments were satisfactory
1 2 3 4 5

The audio-visual materials were appropriate
1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

The course length was
1. Too long 2. Too short 3. The right length

Section 6: Observations

1. How will you utilize the information that you have acquired?

2. What were the weak points of the course?

3. What were the strong points of the course?

Assessment of the evaluation sheets or questionnaires can be done by a general review of the answers and comments or can be more detailed by collating all the responses to each question individually and reporting the results as a percentage of the total participants. The latter form is far more useful as statistical analysis can be performed on the data generated and the success of the course can be quantified ans well as qualified. If proceedings or other document is produced from the course a copy of the questionnaire should be included as well as statistical or graphical representation of the participants' answers and comments.

This information may also be useful as a tool in obtaining support from funding agencies and relevant stakeholders for the convening of similar training courses.

APPENDIX 2
FIELD AND PRACTICAL EXERCISES

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Field exercises are important in the understanding of Integrated Coastal Area Management and the application of Best Management Practices. Field exercises should be coupled with classroom lectures and included in programme of training courses. The purpose of doing a field exercise is to learn how to plan a field visit, to assess a site and its resources, to look at the impact of a particular activity on the site and on the resources (both negative and positive impacts), to look at possible solutions to potential problems, and to generate discussion on the best approach to integrated management. The following points should be taken into account when planning a field exercise.

Site Visit

- Contact appropriate local resource people for involvement and support
- Tour of a selected area (e.g. fishing village, beach, hotel) and outline objectives of the visit.
- Length of time for field visit and logistic requirements
- Selection of concepts and practices for discussion or questions to be answered
- Preparation of a written report after the trip by participants
- Inclusion of additional material (photographs, references, results of interviews)

PRACTICAL EXERCISES

To facilitate an understanding of ICAM principles and their practical application, group exercises may also be designed and delivered during training courses. These should estimate discussion and provide a venue to experience some of the issues and challenges faced by different stake holders in the development of sustainable tourism in the wider Caribbean region. The following is an example of a practical exercise:

In conjunction with the practical exercise, supporting material should be provided. These could include a description of the site, description of the property, map of the area, photographs of the area (including aerial views), copies of existing relevant legislation and copies of relevant workbooks or manuals for reference.

The International Global Resort Co., Barbados, is proposing a joint venture with the Government of Barbados, for the development of a mega tourist settlement in the Mullings Bay area on the south coast. The development will include a 400 room five star hotel, 150 villas for interval vacationing and 100 high cost residences. In the area there are already two hotels and a resident community of 500 people. The area is highly appreciated for the quality of the coastal ecosystems, that include extensive sand dunes and beaches, as well as coral reefs close to the shore. Keeping in mind the principles and goals of Integrated Coastal Area Management, how would you approach the following concerns? Be comprehensive, precise and targeted. Support all proposed strategies with the concepts of ICAM.

1. The coastal ecosystems in the area of impact are already exposed to sources of degradation from land based activities such as erosion and human encroachment.

2. The traditional community in the region has a very strong cultural character including economic activities related to fisheries and agriculture.

3. There is the beginning of a coastal zone management unit which is just developing the guidelines for use in coastal resources in Barbados.

4. The Barbados Government is concerned about issues of sustainability in the use of all its resources.

5. The developers do not have a recognized tradition of being environmentally sensitive in other countries.

6. You have been offered the newly created position, within the developing company, of Environmental Consultant to recommend scientifically sound, and economically viable alternatives for the project underway.

OTHER PRACTICAL TOOLS

In addition to field and practical exercises, it would be recommended to organize informal discussions with relevant tourism practitioners (staff from tourism boards development companies and hotels) and environmental bodies from the host country where the course is being held. These should be valuable opportunities for participants and practitioners from different disciplines to interact regarding tourism and ICAM.

Another useful tool for the sharing of knowledge and experiences is to invite participants to make brief presentations on the status of tourism development and coastal management issues from their own perspectives, or any other case study they judge relevant to the course objectives. Both activities above could be organized as part of an evening programme during course delivery, should time be a constraint.

APPENDIX 3
REFERENCE ORGANISATIONS/ACRONYMS

The following is a list of key organisations in the Wider Caribbean region involved in the management and conservation of coastal ecosystems and in promoting and developing best practises and the acronyms of institutions and organizations referred to throughout this Manual:

AGRRA - Atlantic and Gulf Rapid Reef Assessment, Florida, USA
AN - Acuario Nacional, Dominican Republic
AOC - American Oceans Campain, California, USA
ASK - Amigos de Sian Ka'an, Mexico
BEST - Bahamas Environment, Science and Technology Commission
BNT - Bahamas National Trust, Bahamas
BREEF - Bahamas Reef Environmental Educational Foundation, Bahamas
BHF - Blue Hole Foundation, Bahamas
BMP - Bonaire Marine Park, Bonaire, Netherlands Antilles
CaMPAM - Wider Caribbean Marine Protected Areas Management Network
CANARI - Caribbean Natural Resources Institute, St. Lucia
CARICOMP - Caribbean Coastal Marine Productivity, Florida, USA
CAST - Caribbean Alliance for Sustainable Tourism, Puerto Rico
CCUNRM - Consortium of Caribbean Universities for Natural Resource Management
CDC - Conservation Data Centre, US Virgin Islands
CES - Co-operative Extension Service, US Virgin Islands
CHA - Caribbean Hotel Association, Puerto Rico
CIDA - Canadian International Development Agency
CORAL - Coral Reef Alliance, Florida, USA
CMS - Centre for Marine Sciences, Jamaica
CPACC - Caribbean: Planning for Adaptation to Global Climate Change, Barbados
CII - Clean Islands International, Bahamas
CZMP - Coastal Zone Management Project, Belize
CZMU - Coastal Zone Management Unit, Barbados
DPNR - Department of Planning and Natural Resources, US Virgin Islands
EAST - Environmental Association of St. Thomas and St. John, US Virgin Islands
ECC - Eastern Caribbean Centre of the University of the Virgin Islands
ECO - Earth Communication's Office
EWO -Environmental Watch Organisation, Jamaica
FIP - Fisheries Improvement Project, Jamaica

FOE - Friends of the Environment, Bahamas
FGNMS - Flower Gardens National Marine Sanctuary, Florida, USA
FKNMS - Florida Keys National Marine Sanctuary, Florida, USA
FMSEA - Florida Marine Science Educators Association, Florida, USA
Fundacion MAMMA, Dominican Republic
GCFI - Gulf and Caribbean Fisheries Institute, Florida, USA
GCRMN - Global Coral Reef Monitoring Network
GEF - Global Environmental Facility
GR - Green Reef, Belize
INVEMAR - Instituto de Investigaciones Marinas de Punta de Betín, Colombia
IRF - Island Resources Foundation, St. Thomas, Virgin Islands
LBSMP - Land-based Sources of Marine Pollution
MBMPT - Montego Bay Marine Park Trust, Jamaica
MOET - Ministry of Education and Training, Bahamas
NRCA - Natural Resources Conservation Authority, Jamaica
NCRPS - Negril Coral Reef Preservation Society, Jamaica
OW - Ocean Watch, Bahamas
PAHO - Pan-American Health Organization, Washington, D.C., USA
SEA - St. Croix Environmental Association, US, Virgin Islands
SBF - Siwa-ban Foundation, Belize
SIMAC - Sistema Nacional de Monitoreo de Arrecifes Coralinos en Colombia, Colombia
SMMA - Soufriere Marine Management Area, St. Lucia
STRI - Smithsonian Tropical Research Institute
VIMAS - Virgin Islands Marine Advisory Service
VINP - Virgin Islands National Park Service
WWF - World Wide Fund for Nature
WWW - World Wide Web

APPENDIX 4
FIGURES AND PHOTO CREDITS

COVER	-	Three Photographs	-	Environmental Solutions Limited
MODULE 1				
Page 8	-	Coral Reef (photo)	-	Graphic + (Corel Draw Clip Art)
Page 10	-	Palm trees (photo)	-	Graphic + (Corel Draw Clip Art)
Page 10	-	Ocean View (photo)	-	Graphic + (Corel Draw Clip Art)
Page 12	-	Mangrove (photo)	-	Graphic + (Corel Draw Clip Art)
MODULE 2				
Page 23	-	Environmental Management System Model	-	Modified by Environmental Solutions Limited after ICF, Kaiser, Canada, 1997
Page 24	-	Integration of Environmental Management Activities into Project Development Cycle	-	Modified by Environmental Solutions Limited from Essa Ltd., Sadler and Wiebe, 1996
Page 25	-	Environmental Impact Process	-	Environmental Solutions Limited
Page 26	-	Environmental Assessment	-	Environmental Solutions Limited