

Final Report:

NATIONAL ENVIRONMENTAL MANAGEMENT ACTION PLAN (NEMAP) FOR THE BAHAMAS



Prepared For:

Bahamas Environment Science and Technology (BEST) Commission

Prepared By:

SENES Consultants Limited

August 2005

**NATIONAL ENVIRONMENTAL MANAGEMENT
ACTION PLAN (NEMAP)
FOR THE BAHAMAS**

Prepared for:

**Bahamas Environment Science and Technology (BEST) Commission
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August 2005

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EXECUTIVE SUMMARY

The Government of The Bahamas (GOB) in its effort to meet its commitments under various international environmental Conventions has undertaken a National Capacity Needs Self-Assessment (NCSA) Project. The over-riding goal of each NCSA is to identify and analyze country level priorities and capacity development needs within the context of implementing the key international environmental Conventions.

The Bahamas NCSA Project is intended to review its global environmental responsibilities; assess its existing capacity to meet its commitments to international environmental Conventions, related to biodiversity, climate change, land degradation and wetlands; identify and prioritize their most critical needs; and determine how best to build its capacity to meet its commitments to these Conventions. This is being accomplished through the use of a comprehensive self-assessment methodology and broad consultations with stakeholders and the public. The end result of this process will be the development of a National Environmental Management Action Plan (NEMAP) for The Bahamas that can serve as a tool for the GOB to identify gaps and deficiencies in meeting its international environmental commitments and in addressing other environmental management issues in the country. It will also define appropriate actions as well as provide a baseline to evaluate the effectiveness and efficiency of its capacity development efforts to address these gaps and deficiencies.

The Bahamas Environment, Science and Technology (BEST) Commission, the primary advisor to the GOB on environmental matters and the national focal point for international environmental Conventions, has the responsibility for coordinating the NCSA Project.

The BEST Commission also retained the services of SENES Consultants Limited (SENES) to assist in completing its NCSA Project. SENES' key deliverables include:

- 1 – A report on the NCSA Study focusing on gaps and deficiencies in capacity that need to be filled for implementation of international environmental Conventions dealing with four thematic areas (biodiversity, climate change, land degradation and wetlands) to which the Bahamas is a Signatory.

- 2 – A framework for a NEP highlighting:
 - the uniqueness of The Bahamas;
 - the constitutional basis for environmental management in The Bahamas;
 - NEP policy, goals and objectives;
 - the priority issues of national concern relating to environmental protection and sustainable resource management; and
 - strategies and actions.

- 3 – A NEMAP that:
 - reviews the current state of the environment in The Bahamas;
 - reviews the current governance structure for environmental management in The Bahamas;
 - incorporates the NEP;
 - identifies key programme activities for a Bahamas Environmental Management Programme (BEMP);
 - presents an Action Plan that identifies activities for the immediate (within six months), short (1-3 years), medium (3-5 years) and long (5+ years) term; and
 - outlines sources of funding for carrying out the Action Plan.

Deliverable 1 and 2 have been completed by SENES and submitted to BEST under separate cover. This current report presents the results of the Deliverable 3 and draws on the results of both deliverable 1 and 2.

A NEMAP was drafted by SENES based on information obtained from interviews with several government agencies, local experts, and the review of existing Bahamian regulations, guidelines, policies, etc. The draft NEMAP identified deficiencies with the existing environmental management structure, including legislation, policies and guidelines, institutions, financial resources, human resources, information management and compliance and enforcement. It also recommended specific actions for moving forward. The draft NEMAP was presented at a national NCSA workshop held on April 5-6, 2005 in Nassau. The key conclusions specific to the NEMAP were as follows:

- The NCSA study provides a solid foundation to proceed with developing a NEMAP for The Bahamas.
- That the draft NEMAP presented at the workshop should be revised to include the comments from the workshop participants.
- The NEMAP should include, among other things:
 - the immediate establishment of a Department of the Environment for The Bahamas with a long-term goal of establishing a Ministry of the Environment;
 - a Cabinet Committee on the environment;
 - a National Environmental Council made up of Cabinet Ministers, using the existing National Economic Council as a model;
 - a national multi-stakeholder committee, possibly made up of Permanent Secretary level employees; and
 - the technical thematic subcommittees should be maintained. Technical subcommittees could recommend priorities and send these onward to Cabinet through the relevant Permanent Secretary.

- The draft NEMAP should be made available for public review through a process that gives wide public access including use of the Web, libraries, Island administrators and public service announcements. The review process should have a specified timeline.
- Following the public consultation process, the NEMAP should be submitted to the GOB for approval. This should be accomplished within the next 1-3 years.

Incorporating the input from the workshop participants, along with the information previously compiled from the agency interviews and document reviews, the following key actions are put forth as comprising a NEMAP for The Bahamas:

- adoption of a National Environmental Policy;
- the enacting of new environmental legislation;
- the instituting of a new environment Department and Ministry;
- implementation of a new governance structure;
- adoption of a blueprint for environmental management, including new regulations, guidelines and policies;
- options for securing stable and reliable funding for environmental management; and
- improvements to human resources, Family Island services, training, information management and compliance and enforcement.

LIST OF ACRONYMS

BEST	The Bahamas Environment, Science and Technology
BNT	Bahamas National Trust
DEHS	Department of Environmental Health Services
EEZ	Exclusive Economic Zone
GHGs	Greenhouse Gases
GIS	Geographic Information Systems
GOB	Government of The Bahamas
EIA	Environmental Impact Assessment
MOPW&U	Ministry of Public Works and Utilities
NCB	National Coordinating Body
NEMAP	National Environmental Management Action Plan
NGOs	Non-Governmental Organizations
SIDS	Small Island Developing States
WRMU	Water Resources Management Unit
WSC	Water and Sewage Corporation

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1.0 INTRODUCTION

Over the past decades, the international community has reached unprecedented international agreements on global environmental issues such as climate change, biodiversity, desertification/land degradation and wetlands mainly in the form of binding Conventions. While these international Conventions are viewed as crucial to achieving the goal of sustainable development and resource conservation, their effective implementation places significant demands on the capacity of participating countries and in particular developing countries and small island developing states (SIDS).

The Bahamas is a small island developing state which is Signatory to a number of international environmental Conventions. The Bahamas has identified a lack of capacity as a key obstacle to its effective implementation of these Conventions, representing a major impediment to the country's aspiration of sustainable development. While its size and available resources represent a major factor contributing to its limited capacity to implement the international environmental Conventions to which it is a Signatory, this is further compounded by the vast number and archipelagic nature of its islands and their differing ecosystems, the scarcity of freshwater reserves, the limited options for and high cost of waste disposal and the rate and pace of economic development.

Recognizing the importance of building its capacity to effectively implement these Conventions so it can achieve its goal of sustainable development, the Government of The Bahamas (GOB) has initiated a National Capacity Needs Self Assessment (NCSA) Project. The over-riding goal of each NCSA is to identify and analyze country level priorities and capacity development needs within the context of implementing the key international environmental Conventions.

The Bahamas NCSA Project is intended to review its global environmental responsibilities; assess its existing capacity to meet its commitments to international environmental Conventions, in particular those related to biodiversity, climate change, land degradation and wetlands; identify and prioritize their most critical needs; and determine how best to build its capacity to meet its commitments to these Conventions. This is being accomplished through the use of a comprehensive self-assessment methodology and broad consultations with stakeholders and the public. The end result of this process will be the development of a National Environmental Management Action Plan (NEMAP) for The Bahamas that can serve as a tool for the GOB to identify gaps and deficiencies in meeting its environmental international commitments and in addressing other environmental management issues in the country. It will also define appropriate actions as well as provide a baseline to evaluate the effectiveness and efficiency of its capacity development efforts to address these gaps and deficiencies.

The Bahamas Environment, Science and Technology (BEST) Commission, the primary advisor to the GOB on environmental matters and the national focal point for international environmental Conventions, has the responsibility for coordinating the NCSA Project. The BEST Commission has set out the following as the major goals of the NCSA Project for The Bahamas:

- identification, review and confirmation of priority issues within the four thematic areas of (1) biodiversity, (2) climate change, (3) land degradation and (4) wetlands;
- identification of the needs and priorities required for building the country's capacity to meet its international commitments under the Conventions dealing with (1) biodiversity, (2) climate change, (3) land degradation and (4) wetlands;
- definition of synergies across the four thematic areas;
- development of programmes for the four thematic areas;
- development of a framework/mechanism for targeted and coordinated action, including requests for external funding assistance;
- linkage of the country's framework National Environmental Policy (NEP) with respect to a broader national environmental strategy for The Bahamas; and
- development of a NEMAP.

As part of the process for the NCSA Project, the BEST Commission undertook comprehensive public consultations with the residents within the chain of inhabited islands of The Bahamas. These were facilitated through a number of public outreach activities involving churches, civic organizations, schools and local governments. Through these public consultations, information on environmental concerns, needs and priorities was obtained from all sectors of the population.

The BEST Commission also retained the services of SENES Consultants Limited (SENES) to assist in completing its NCSA Project. SENES' key deliverables include:

- 1 – A report on the NCSA Study focusing on gaps and deficiencies in capacity that need to be filled for implementation of international environmental Conventions dealing with four thematic areas (biodiversity, climate change, land degradation and wetlands) to which the Bahamas is a Signatory.
- 2 – A framework for a NEP highlighting:
 - the uniqueness of The Bahamas;
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 - NEP policy, goals and objectives;
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- 3 – A NEMAP that:
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 - presents an Action Plan that identifies activities for the immediate (within six months), short (1-3 years), medium (3-5 years) and long (5+ years) term; and
 - outlines sources of funding for carrying out the Action Plan.

Deliverable 1 and 2 have been completed by SENES and submitted to BEST under separate cover. This current report presents the results of the Deliverable 3 and draws on the results of both deliverable 1 and 2. In general information for this report was obtained from:

- 1) results of deliverables 1 and 2;
- 2) use of existing documents;
- 3) review of results of BEST public consultations;
- 4) interviews with government officials/experts; and
- 5) national workshops.

In addition to this introductory chapter, the rest of the report includes:

- Chapter 2 – An overview of the state of The Bahamas' environment.
- Chapter 3 – A summary of the legal and institutional framework for environmental management in The Bahamas.
- Chapter 4 – Gaps and deficiencies in the capacity of The Bahamas to effectively implement the international environmental Conventions addressing the four thematic areas and to address other environmental issues and concerns.
- Chapter 5 – An outline of an Action Plan for The Bahamas.

**TABLE 1.1
NCSA ACTIVITY SUMMARY**

Task	Output	Responsibility	Date	Preparatory Activities
1. Initiating the planning process			August 2003	
2. Establishing high level co-ordination and supervision				
Appointment of Project Coordinator (PC)	TORs and appointment	NCB and BEST	August 15	TORs
Formal establishment of NCSA National Coordinating Body (NCB)	Meeting minutes	BEST	August 19	Letters of invitation
Stakeholder identification	Analysis matrix	BEST and PC	August 19	Circulate to SBC members for completion by August 25
First planning session of NCB, Project Coordinator and Subcommittees	Meeting minutes	BEST and PC	August 27	Develop information documents and presentation
3. Stock-taking and gap identification				
NCSA/NEMAP National Consultation Workshop	Workshop report	BEST and PC	Sept. 15-18	Liaison with LG Development of agenda, presentations, discussion material, surveys/questionnaires
1 st Report to UNEP on project status and finances	Project Report 1	BEST	Sept. 30	Use formats provided
Training workshop in capacity building and assessment	Workshop report and training evaluation	BEST and PC	October	Organize workshop (venue, agenda, letters, pr, etc.)
4. Thematic assessments				
Thematic assessments for biodiversity, climate change, land degradation and wetlands	Draft assessments	NCB, PC and Subcommittees	Oct. – Nov.	Develop formats for completion by subcommittees
Consultation and development of thematic profiles/ programmes	Thematic profiles/ programmes	Subcommittees	Nov. – Dec.	Programmes developed in time to be formatted for inclusion in NEMAP document
5. Synergies and Cross-cutting				
Identification of synergies and cross-cutting analyses	Draft report on synergies	NCB, PC, BEST and Subcommittees	Jun. 15	One-day workshop (organization associated with formats to be filled)
2 nd Report to UNEP on project status and finances	Project Report 2	BEST	Dec. 31	Use formats provided

**TABLE 1.1 (Cont'd)
NCSA ACTIVITY SUMMARY**

Task	Output	Responsibility	Date *	Preparatory Activities
6. Framework for domestic action				
Systemic, institutional and individual level assessments	Needs assessment	BEST and PC	Jun. – Nov.	Contract a consultant with specific TORs
Second planning session of NCB, Project Coordinator and Chairs of Subcommittees	Meeting minutes	BEST and PC	May 25	
Development of NCSA Framework	Draft Framework	NCB, PC, Subcommittees and BEST	Jun. – Nov.	Drafting to be formatted by publisher as a single document/inclusion in NEMAP document
7. Developing thematic programmes				
Respective subcommittees to develop programmes with long term goals	Draft Programmes	Subcommittees	Nov. – Dec.	
8. Developing a NEMAP				
Third planning session of NCB, Project Coordinator and Chairs of Subcommittees	Meeting minutes	BEST and PC	Oct.	
NCSA/NEMAP National Planning Workshop	Workshop report	BEST and PC	Nov.	
Development of NEMAP	Draft Action Plan	NCB, PC, Subcommittees and BEST	Oct. – Jan.	
National workshop to present project outputs	Revised Framework and Action Plan	BEST and PC	Jan 2005	
9. Monitoring mechanisms				
Development of mechanisms to monitor progress	Final Framework and Action Plan	NCB, PC, Subcommittees and BEST	Dec.	
Final report to UNEP with accompanying documents produced during the project (including workshop reports)	Project Report 3	BEST	Feb.	

Note * - Many of the tasks listed were completed at dates later than as shown in this table.

2.0 THE STATE OF THE BAHAMAS ENVIRONMENT

The purpose of this chapter is to provide an overview of the current state of the environment focusing on the valued environmental components (VECs) in The Bahamas and to identify the key related concerns and issues. The chapter is organized as follows:

- 2.1 Geography
- 2.2 Population
- 2.3 Climate
- 2.4 Economy
- 2.5 Valued Environmental Components
 - 2.5.1 Air Quality
 - 2.5.2 Soils
 - 2.5.3 Freshwater Resources
 - 2.5.4 Marine Resources
 - 2.5.5 Biological Resources (Terrestrial and Aquatic)

The chapter draws mainly on information from The Bahamas Environmental Handbook and the First National Communication on Climate Change.

2.1 GEOGRAPHY

Geographically considered part of the Caribbean, The Bahamas comprises an archipelago of over 700 low-lying islands plus more than 200 cays, islets and rocks, covering approximately 100,000 mi² (260, 000 km²) that include the area of the country's Exclusive Economic Zone (EEZ) in the Atlantic Ocean. The total land area is approximately 5,380 mi² (13, 934 km²). The islands extend 50 miles (km) east of Florida to 50 miles (km) northeast of Cuba. In addition to the United States and Cuba, neighbours include Haiti and the Turks and Caicos Islands, located to the southeast of The Bahamas, as shown on Figure 2.1 (*First National Communication on Climate Change, p.5; Bahamas Environmental Handbook, pp.2-4*).

FIGURE 2.1
THE BAHAMAS AND SURROUNDING COUNTRIES



As noted, the islands have low relief. The highest point in The Bahamas is 206 ft (63 m), above mean sea level, at Mt. Alvernia on Cat Island. There are no rivers, but several islands have large brackish lakes, and many others are deeply penetrated by tidal creeks, notably Andros and Grand Bahama. These creeks are generally navigable by small boats. The potable freshwater resources of The Bahamas overlay brackish and saline waters and mostly occur within five feet of the land surface (*Bahamas Environmental Handbook*, pp.2-3).



Photo taken by BEST

Around the islands, especially on their windward sides, are extensive fringing of coral reefs. There are also areas of patch reefs on the interiors of the banks, as well as extensive sea grass beds. Collectively, the Bahamian shallow seas provide the largest body of coral reef and other marine organisms in the Atlantic/Caribbean region. The estimated reef area is 3,800 mi² (10,000 km²) (*National Biodiversity Strategy Action Plan p.10*).



Photo taken by Sharrah Moss



Photo taken by Fred Bernard

The landscape of the islands consists of a mixture of rolling hills and ridges, flat rockland, and extensive wetlands. Vegetation provides a superficial cover where it has not been cleared for settlement or agriculture. The natural vegetation consists of forests of Caribbean pine in the four northern islands and various levels of broadleaf hardwood forests and coppice vegetation elsewhere, although this becomes less diverse and more stunted in the drier southern islands (*Bahamas Environmental Handbook, pp.2-4*).

2.2 POPULATION

Approximately 30 of the over 700 islands are inhabited. The population of The Bahamas was estimated to be about 295,000 in 2000, growing at a rate of just over 1%. Thirty percent of the population is under 15 years old, and about 94% is less than 65 years old. [BEST will provide more recent statistics from most recent census]. The two major population centres are the capital, Nassau which is located on New Providence Island and Freeport, located on Grand Bahama Island. Over 80% of the population reside in these two centres ([wysiwyg://5/http://geography.about.com/library/cia/blcbahamas.htm](http://geography.about.com/library/cia/blcbahamas.htm)).

2.3 CLIMATE

The climate of the Bahamas is described as sub-tropical, moderated by the warm north-flowing Gulf Stream. The Bahamas has two distinct seasons: a hot wet summer season (May to October)

and a warm drier winter season (November to April). Mean annual rainfall varies from about 34 in (865 mm) to 58 in (1470 mm). Mean daily temperature varies between 63°F and 90°F (17°C to 32°C).

The climate of The Bahamas poses some environmental problems. Hurricanes and tropical storms are a regular occurrence during the Atlantic hurricane season that extends from June to November. The high winds, rains, storm surges and associated flooding caused by this severe weather conditions can result in significant damage. High evaporation rates and low rainfall, makes the southern half of The Bahamas semi-arid and water deficient. Even in wetter areas such as New Providence which receives on average 50 in (127 mm) of rainfall annually, potable water has to be barged from nearby Andros, and is also supplemented by desalination plants.

2.3.1 Vulnerability to Climate Change/Climate Variation

Trends in climate extremes for the Caribbean show that climate change is manifested in the Caribbean by an increase of about 1C° in average temperature in most countries over the last century, with most of the change occurring in the last 30 to 40 years (Peterson, Taylor, 2002). Averaged over the Caribbean, the percentage of hot days when maximum and minimum temperatures were higher than the 90% percentile (1977-1997) has risen from 4% to 8% since 1960. The percentage of annual rainfall that comes from very high intensity one-day rains has increased from 24% to 28%. These trends of increasing frequency of extreme events are projected to continue with further increases in greenhouse gas concentrations in the atmosphere (*Adapting to Climate Change in the Caribbean, May 2004*).

Bahamian data show that the mean daily maximum temperature for July have increased at a rate of 3.6 F° (2 C°) per 100 years, and more recently at the rate of 4.8 F° (2.6 C°) per 100 years. Climate models also predict increased heavy rain events, and drought in some areas. The data show that over the past 95 years rainfall in Nassau has decreased at a rate of 4.2 in (107 mm) per 100 years, but since 1959, has been increasing at a rate of 21.8 in (554 mm) per 100 years (*First National Communication on Climate Change, April 2001*).

Like many other SIDS, The Bahamas with its fragile coastal ecosystems is extremely vulnerable to the effects of global climate change and sea level rise, as some 80% of the landmass is within 5 ft (1.5 m) of mean sea level. Coastal areas, holding the vast majority of the population and economic activity, are vital to the prosperity of these islands. Coastal areas are also the most productive areas, supporting a wealth of living marine resources



Photo taken by Fred Bernard

and high biological diversity.

The vulnerability of coastal resources, human settlements and infrastructure to sea level rise, increases in sea surface temperature, and changes in wind and ocean currents, etc., is a significant concern to The Bahamas (*CPACC brochure*).

2.4 ECONOMY

The Bahamas is a developing nation with an economy heavily dependent on tourism and offshore banking. Tourism alone accounts for more than 50% of the Gross Domestic Product (GDP) and directly or indirectly employs about 40% of the labour force. About 60% of the visitors arrive by sea and the rest by air, contributing about \$1.5 billion to the Bahamian economy annually.



Photo taken by Fred Bernard

The banking and financial sector accounts for approximately 15 % of GDP, which is about \$300 million annually (*wysiwyg://5/http://geography.about.com/library/cia/blcbahamas.htm, First National Communication on Climate Change, and p.6, Bahamas Environmental Handbook*).



Photo taken by Fred Bernard

Other sectors of economic importance to The Bahamas include agriculture, fishing and manufacturing. In 2002, the value of agricultural production in The Bahamas was approximately \$50 million, with large-scale crop production concentrated on Abaco, Andros, and Grand Bahama. Commercial fishing generates about \$70 million to the economy annually. Recreational fishing is also an important aspect of the local tourism industry. The Bahamas manufacturing sector is small, accounting for only 4% of GDP.

Most of the industrial operations are located in and around Freeport Harbour on Grand Bahama Island and include cement bagging, oil bunkering, ship dry-dock and repair and pharmaceuticals manufacture (*Bahamas Environmental Handbook*).

2.5 VALUED ECOSYSTEM COMPONENTS

The following subsections briefly describes the valued ecosystem components of The Bahamas and discusses the key issues and concerns related to the maintenance of these components as summarized mainly from The Bahamas Environmental Handbook.

2.5.1 Air Quality

Ambient air quality in most of The Bahamas is relatively good for the following reasons:

- The local meteorology is dominated by strong easterly trade winds for the majority of the year, and multi-directional but still windy conditions in the remainder of the year. The strong winds will tend to transport emissions from sources located on the Islands out over water, rather than allowing them to accumulate and concentrate in ambient air over areas of population. This same effect will also preclude the chance for sufficient accumulations of ozone precursors that could lead to elevated levels of ambient ozone.
- The density of industrial activity (and emission) on the islands is low. Areas of relatively low industrial activity tend to have acceptable concentrations of air contaminants.
- The population density is relatively low.

Table 2.1 shows carbon dioxide emissions from fossil fuel sources in The Bahamas for 1990 and 1994, and Table 2.2 shows estimated emissions from other GHGs in The Bahamas for the same years.

**TABLE 2.1
CARBON DIOXIDE EMISSIONS FROM FOSSIL FUEL ENERGY SOURCES IN THE
BAHAMAS FOR 1990 AND 1994 (Gigagrams of CO₂)**

Fuel Type	1990	1994	% Total
Gasoline	470.7	476.5	25.2
Jet Kerosene	55.0	43.6	2.6
Gas/Diesel Oil	802.4	593.5	37.1
Residual Fuel Oil	424.8	696.9	29.8
LPG	39.7	40.8	2.1
Other Oils	101.5	14.9	3.1
Total (Gg CO ₂)	1894.1	1866.2	

Note: 1 A Gigagram (abbreviated to Gg) is 1,000,000,000 grams or 1,000 metric tonnes.

Source: First National Communication on Climate Change.

TABLE 2.2
ESTIMATED EMISSIONS OF OTHER GREENHOUSE GASES IN THE BAHAMAS
FOR THE YEARS 1990 AND 1994 (Gg)

Year	Methane (CH ₄)	Nitrous Oxide (N ₂ O)	Carbon Monoxide (CO)	NMVOCs
1990	2	0	4	3
1994	1	1	4	3

Source: *First National Communication on Climate Change*.

Due to its small industrial base and low population density, the Bahamas is not a major contributor to greenhouse gases (GHGs). Electricity generation and the transportation sector (through the burning of petroleum products) were determined to be the two most significant sources of GHG emissions in The Bahamas. Carbon dioxide emissions produced by the consumption of gas/diesel oil and residual fuel oil for electricity generation, account for some 65% of total CO₂ emissions in The Bahamas. Heavy use of air conditioning and refrigeration also releases CFCs into the atmosphere when equipment is damaged, poorly maintained, or discarded.



Photo taken by Fred Bernard

With its extensive vegetation cover and marine production of calcium carbonate, The Bahamas can be considered a major absorber, or ‘sink’ for carbon dioxide. Forests sequester CO₂ by photosynthesis, and Bahamian forests include pine, coppice (or hardwood), and mangrove forests. The extensive shallow marine areas sequester carbon dioxide through chemical, mechanical and biological processes. An estimated 370 to 739 kg CO₂ per year is sequestered over a 277 km² area of shallow marine banks around Abaco. This equates to a carbon sequestration of some 121,968 to 243,930 Gigagrams (Gg) of CO₂ over the entire shallow water banks of The Bahamas (*First National Communication on Climate Change*).

2.5.2 Soils

Very little of the total area of The Bahamas is land (some 5.4%) therefore, there are competing demands for the limited land resources, including urban use, agriculture, forestry, tourism and conservation.

Bahamian soils are thin, coarse-textured and fragile, and quickly become exhausted. Various attempts at commercial agriculture have been tried, and some have had some success. Land use has changed dramatically on New Providence over the past thirty (30) years with the building of several large resort hotels, and large tracts of land have been cleared for housing, business complexes and roads. A great deal of land clearing and construction has also taken place on Grand Bahama Island. The forest



Photo taken by Fred Bernard

resources of The Bahamas comprise pine forest, coppice forests and mangrove forests, with approximately 80% of forest resources on state land (Crown land). Pine forests are considered the most productive of the three forest types, and pine is now a protected species. Coppice (hardwood) forests are found in the central and southern Bahamas [*First National Communication on Climate Change*].

The key issues and concerns related to soil in The Bahamas include:

- the use of arable land for infrastructure development including roads, resorts, housing, etc.;
- pollution associated with chemical spills from industrial facilities;
- indiscriminate dumping of solid wastes, including derelict vehicles, on undeveloped lands; and
- leachate contamination from improperly designed landfills/waste dumps and septic systems.



Photo taken by BEST

2.5.3 Freshwater Resources

Rainfall is the only source of freshwater in The Bahamas. Throughout the islands, the average annual rainfall varies from about 34 inches (in)/865 millimetres (mm) to about 58 in (1470 mm). There is a distinct northwest to southeast gradient to decreasing rainfall (*First National Communication on Climate Change*). There are no rivers or major freshwater lakes in the country. As rainwater seeps through the soluble limestone rock, it comes to rest on top of the

denser seawater, where it forms lenses of freshwater throughout the islands. There is generally an intervening brackish layer between the two, and freshwater can be discharged along the shoreline during periods of heavy rain.

Wetlands

The amount of rainfall received and the size of each island ultimately determines the volume of its freshwater resources. Andros accumulates the largest quantities of freshwater, but Grand Bahama Island and Abaco also have large reserves. Thousands of gallons of water are pumped from the lenses on these islands and shipped to New Providence daily. In many places, this freshwater forms wetlands and small pools at the surface, and seasonal ponds exist on all islands. Freshwater wetlands in The Bahamas tend to be small, seasonal and widely scattered.



Photo taken by The Bahamas Ministry of Tourism

Wetlands are components of larger biophysical systems that include bordering (and sometimes more distant) terrestrial and aquatic systems underlying groundwater systems, diverse biotic systems, and complex nutrient cycling and sequestration systems. The functions provided by wetlands often affect or benefit an area beyond the confines of the wetland itself. They help to regulate water levels within watersheds; improve water quality; reduce flood and storm damages; provide important fish and wildlife habitat; and support hunting, fishing and other recreational activities (BEST, www.best.bs/wetlands.htm).

There are several concerns regarding the management of wetlands in The Bahamas. These include:

- There is no recent national inventory of wetlands in The Bahamas. As a result, the necessary information for designation and conservation/protection is unavailable to guide effective decision-making.



Photo taken by BEST

- There is insufficient legislation to protect wetlands, which poses a significant threat to their conservation.
- Many wetlands are in locations that are attractive to development and are thus under threat by activities such as illegal excavation and reclamation.
- There is a general decline in the number of healthy wetland ecosystems in The Bahamas.

Potable Water

Water is also obtained from shallow wells, trenches, pits, freshwater marshes, and rainwater catchments in lesser-developed areas. Distillation and reverse osmosis have become common methods of obtaining freshwater in The Bahamas. Reverse osmosis is cheaper and faster than distillation and is currently used in many industrial sectors. In addition, some Bahamian companies use reverse osmosis to produce thousands of gallons of drinking water a day for the commercial market [*Bahamas Environmental Handbook, p. 27*].

Ninety percent of The Bahamas' freshwater lenses are within five feet of the land surface. The fresh groundwater resource is therefore, fragile and highly vulnerable to contamination and overexploitation. Some of the major natural and anthropogenic related issues and concerns on fresh water resources are described below:

Salt Water Intrusion

Intrusion of salt into fresh water sources due to over-pumping and inundation from storm surges arising from tropical storms and hurricanes.



Photo taken by Philip Welch

Uncontrolled Extraction

The lack of controls on water extraction methods, sites of extraction, and the rates of extraction are endangering the water supply in some areas and hence its availability for domestic and other important uses.

Groundwater Contamination

The close proximity of The Bahamas' groundwater resources to the ground surface makes these ground waters particularly vulnerable to contamination by pollutants released or spilled onto the ground surface or released by underground storage tanks, pipes, lagoons, or other structures. Some of the key threats include:

- sewage (if not properly handled, sewage can contaminate groundwater with dangerous pathogens and/or nitrates);
- leachates leaking from landfill sites;
- industrial wastes such as dry cleaning wastes and photo processing solvents;
- agriculture products (pesticides, fertilizers, fungicides, and herbicides);
- spills or leaks from underground fuel storage tanks;
- hazardous wastes from dumps and spills, and releases of toxic chemicals and oils;
- waste handling from automobile service and repairs (in the past, activities such as the dumping of lead-acid automobile batteries, antifreeze, lubricants, hydraulic fluids, and solvents have caused serious contamination); and
- zinc from the normal wear of automobile tires on the road.

Public Health Concerns

Chemical contamination of freshwater poses a major health risk for humans and the surrounding ecosystems. Microbial contamination of the freshwater also presents risk of disease, including serious and potentially deadly disease outbreaks.



Photo taken by Fred Bernard

Tourism

Tourists use substantially more water than resident Bahamians. With an expanding tourism industry, the availability and distribution of freshwater may present difficulties in the future.

2.5.4 Marine Resources

Marine environments cover the greatest area of The Bahamas and are linked in both the flow of energy and matter through biological and ecological cycles. The marine environment can be classified into four main categories: sea grass beds, coral reefs, pelagic ecosystems and deepwater ecosystems.

Sea Grass Beds

Sea grasses beds, the most common tropical shallow-water environment worldwide, grow in a few inches of water or up to depths of 100 ft (33 m) and more and cover thousands of acres of the Bahama Banks. The grass blades trap sediment by forming a small forest of leaves and

provide food and a refuge for fish, crabs, and other marine life that are critical to sustaining the benefits derived from all aspects of the commercial and recreational fisheries.

Sea grass also stabilizes sediment and traps small particles, helping to maintain the clear waters of The Bahamas. When sea grass beds are destroyed, the water can become more turbid, making the area an unsuitable habitat for many animals and less attractive for use by tourists. Threats to sea grass beds include:

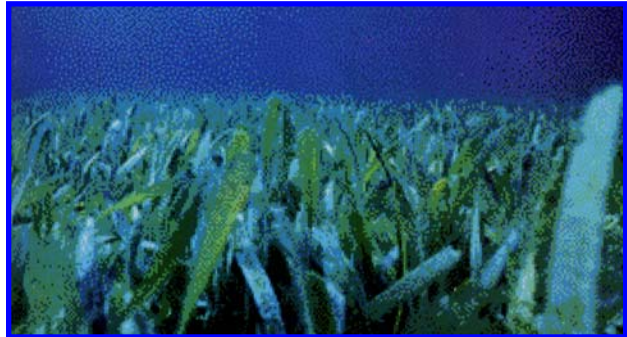


Photo taken by Page Gill

- careless boating practices which cause sea grass beds to be scarred by propellers and allow the sea grasses to be severely eroded in storms;
- long-term anchoring of boats in grass beds can cause erosion and damage to the root system of sea grasses and should be avoided except in emergencies;
- the widespread use of jet skis can result in the destruction of sea grass beds, causing murky water and excessive seaweed on the beach;
- dredging areas of sea grass for channels, marinas and sand, destroys the sea grass and the suspended fine sediments suffocate adjacent sea grass beds and reefs;
- pollution run-off, especially sewage or excess nutrients, can also kill sea grasses, nutrients in sewage can cause algae to overgrow the grass, and smother the grass blades;
- silt from works and undertakings on land;
- direct discharge of contaminants/pollutants from industrial and other human activities; and
- discharges from boats; etc.

Coral Reefs

Coral reefs are the most spectacular of the marine environments of The Bahamas. Every year, thousands of people come to The Bahamas to dive on the reefs, fish on the reefs, or cruise the islands to appreciate the reefs and surrounding environment. Coral reefs are valuable for the protection of ecosystems including:



Photo taken by Sharrah Moss

Production of sand: The sand on beaches consists of pieces of coral, shell and algae that make up the sand grains. Much of this sediment production comes from reefs and their associated fauna.

Tourism: Coral reefs have proven to be important economically as tourist attractions. Visitors enjoy scuba diving and snorkelling amongst colourful fish, marine organisms, and intricate coral structures.

Educational and scientific opportunities: The coral reefs offer humans an opportunity to learn about complex biological processes and serve as a laboratory for scientist.

The coral reefs of The Bahamas are threatened by the following:

- the ‘physical destruction’ of reefs from dredging and development, the creation of navigation channels through reefs, and destructive fishing methods such as bleaching or dynamiting reefs;
- chronic destruction of reef environments occurs from anchor damage that breaks corals, or damage coral heads to the point that the coral is more susceptible to disease or predation;
- over-harvesting marine animals from the reef environment has a primary impact on the population of that animal itself and secondary impact on the reef ecology; and
- changes in water quality as a result of discharges of chemicals, nutrients, sediment can adversely affect coral reefs.

Pelagic Ecosystems

The pelagic zone discussed here is the top 3000 ft (938 m) of water – the epipelagic and midwater zones of the ocean – that support a vast oceanic food. The proximity of this deep water offshore creates exciting sport fishing opportunities and convenient shipping lanes for cargo and cruise ships alike.

The clear, warm pelagic environment of The Bahamas is also attractive to species seeking winter protection such as the great whales and dolphins. Marine pollution, overharvesting by local fishermen and poaching by foreign vessels are some of the major threats to these ecosystems.

Deep Water Ecosystems

The deep sea environments of The Bahamas include the waters at depths greater than 3000 ft (938 m), the deep ocean floors of submarine canyons, and the adjacent deep Atlantic. These deep sea environments hold a variety of fishes and marine life. Even areas as remote as the deep sea environment are threatened by human activity such as deep water disposal of cars, trash and other unwanted material.

2.5.5 Biological Resources (Terrestrial and Aquatic)

Within The Bahamas archipelago a mosaic of natural systems exists, representative of the tropical Americas: coral reefs, mangroves, sea-grass meadows, lagoons and beaches. The coral reefs are rich with fish and marine life. Biologically, The Bahamas can be described as an oligotrophic system because its waters and land are low in nutrients. This tightly associated group of organisms recycle and reuse organic material to produce forests, wetlands, and reefs from near-desert conditions (*Bahamas Environmental Handbook, p.22*).

The natural resources of The Bahamas are limited. More than 80% of the land surface is only a meter or less above mean sea level. The economy is built on tourism and services. Bahamians, like other island peoples, have historically had a close relationship with the land and sea. Until the advent of modern tourism and banking industries, most Bahamians relied on the resources of both land and sea for survival. This is still true in most of the Family Islands, where many of the inhabitants are either fishermen, or farmers, or both. Tourism, the main economic activity in The Bahamas, is largely fueled by the lure of tourists to the natural beauty of the country. Marine biodiversity, in particular, has been an attraction to visitors seeking scenic beauty, recreational fishing, scuba diving, other water sports and fresh seafood (*First National Communication on Climate Change, p.4, Bahamas Environmental Handbook, p.5*).

2.5.5.1 Terrestrial Environment

Very little of the total area of The Bahamas is land. About 40% is shallow water bank easily accessible to man, and the remainder is deep oceanic water and the seabed. Further, more than 80% of the land surface is only about 1.5 m or less above mean sea level. (*Bahamas Environmental Handbook and First National Communication on Climate Change*). As was stated earlier in Section 2.3, high evaporation rates and low rainfall, makes the southern half of The Bahamas semi-arid and water deficient. Even wetter areas such as New Providence, depend on potable water barged in from nearby Adros, and is also supplemented by desalination plants.

There are three major terrestrial vegetation environments in The Bahamas based on vegetation classification: Northern Bahamas pine forests found on Abaco, Andros, and Grand Bahama; Central Bahamas broadleaf hardwood forests, commonly known as coppice, including mahogany and brasiletto found on islands such as Cat Island; and Southern Bahamas drought-resistant woodlands. To a large degree, The Bahamas supports a flora and fauna that are distinct from the rest of the Caribbean.



Photo taken by Fred Bernard

The unique biodiversity of the pine forest includes the ground-nesting Bahama Parrot and the rare Kirtland's Warbler which winters in the Bahamian pine forests. Other wildlife found in pine forests include the quail, Wood dove, White-crowned pigeon, and several hummingbird and duck species.



Photo taken by Fred Bernard

In the Central Bahamas broadleaf hardwood forest, animals are limited to a relatively few small species, including snakes, crabs, lizards, bats and the hutia, a brown, rabbit-sized member of the rodent family. The bird life, both resident and migratory, is abundant (*Bahamas Environmental Handbook p.25*).

The forest ecosystem of The Bahamas provides these important ecological benefits:

- habitat for many animals, including rare and endangered species;
- protection of soil and freshwater resources;
- recreational opportunities like bird-watching, camping and hunting;
- scenic landscapes; and
- a variety of plants used in horticulture and traditional bush medicine.



Photo taken by Fred Bernard

The primary threats to the forest ecosystems of The Bahamas are:

- fires which may be started carelessly or deliberately by humans;

- indiscriminate tree clearing for development destroys natural habitat;
- overexploitation in the past has caused the near-extinction of some tree species; and
- competition from exotic or introduced species like the Casuarina and the Brazilian pepper reduces the abundance of native vegetation and alters important native habitats. (*Bahamas Environment Handbook*)

2.5.5.2 Coastal Environment

Due to its island nature, The Bahamas has an extensive coastline, and few places are far from the sea. Most of the country can be considered coastal, and because of the pattern of settlement and nature of the economy, this is undoubtedly the most important of all Bahamian environments. Coastal environments are best considered according to the two processes usually acting on them, namely erosion and deposition.

Many features of eroding coastlines can be attractive and useful to humans. High cliffs, for example, erode slowly and protect the interior land from flooding. The cliff elevation provides attractive vistas and cooling breezes for residential and tourist development. Within the cliffs, there are caves found at, above, or below sea level. Other scenically attractive landforms, such as stacks, arches, finely sculpted headlands, and other features make the eroding coasts classic tourist attractions.

Deposition along the coast is an ongoing process. The material is mainly sand but can include finer particles such as silt and mud, and larger material such as stones and boulders. The most common areas of deposition are beaches, which may have great length and width. Smaller depositional areas, such as spits, tombolos and sand dunes, are not uncommon. Indeed, sand dunes are universal along the windward coasts of most islands.

The coastal zone includes many diverse and interconnected ecosystems and communities. If one is harmed, it directly affects the other ecosystems to which it is connected. Far ranging species such as seabirds, sea turtle, and marine mammals connect coastal zone ecosystems of The Bahamas with those of other islands in the greater Caribbean and even larger areas. Some of the more important services that coastal zone areas provide to the people of The Bahamas include:

- hurricane resistance/buffer zone;
- tourist attraction;
- educational opportunities; and
- living resources.

Potential threat to the coastal environment include:

- Sand Mining

If sand is removed from either the beach or dunes, its protective value is reduced. Even driving a vehicle over the sand dunes to park destroys the vegetation, which holds the dune together.



Photo taken by Philip Welch

- Infrastructure Development

Building roads, houses, or other structures on the beach or immediately next to it prevent sand dunes from recovering from storm damage, which most beaches can do naturally if left alone. Improper construction near sand dunes causes erosion of the dunes and loss of that protective buffer between the ocean and the inland areas of the islands. Loss of sand dunes can also result in significant changes in the location and extent of beaches that are maintained in part by the presence of the dunes.

- Construction of Penetrating Structures

Beaches are quite vulnerable to onshore and offshore activities, and structures that actually penetrate beaches are even more destructive than structures along the edge of beaches. Such penetrating structures include docks, marinas, groynes and canals, and any structure that interferes with the lateral movement of sand along a beach. Even seawalls intended to protect beaches can actually lead to increased sand loss and enhanced erosion.

The size, complexity and ecological isolation of The Bahamas has important implications for biodiversity. Each specie and life-form in an ecosystem plays a unique but significant role, which contributes to the robustness of the ecosystem. In small island states, such as The Bahamas, maintaining these ecosystem characteristics is a challenge (*BEST – The Commonwealth of The Bahamas National Biodiversity Strategy and Action Plan, June 30, 1999*).

Small islands are much more prone to loss and extinction of species than are large land masses. Removal of one or more components, invariably leads to ecosystem change or even loss. Ecologically diverse environments are more stable and better able to withstand the disturbances of adverse weather, and ultimately climate change. As was stated earlier, the archipelagic nature of The Bahamas makes it especially vulnerable to such environmental stresses (*Bahamas Environmental Handbook, p.11*) and for this reason, maintaining biological diversity is of

paramount importance. In marine ecosystems for example, destruction of coral reefs and sea-grass beds removes food and shelter for many life-forms, and leads to declines in commercial fish populations. Coral reefs and swamps also protect coastal areas from ocean storms and surges, and, swamps also reduce flooding. Mangrove swamps provide nurseries for many fish of commercial importance, as well as for crabs, and provide nesting sites for birds. In terrestrial ecosystems for example, development pressures are a continuing threat to the protected species like the Caribbean Pine, which is unique to The Bahamas.

3.0 LEGAL AND INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT

This chapter reviews the governance system of the GOB and the existing laws, policies and guidelines, international Conventions and institutions for environmental management in The Bahamas.

3.1 LEGAL FRAMEWORK

3.1.1 System of Governance

The Commonwealth of The Bahamas has over 270 years of uninterrupted Parliamentary Democracy. Prior to its independence in 1973, The Commonwealth of The Bahamas was a British Colony. To this date, The Bahamas remains a member of the Commonwealth and retains the British monarch as its chief of state, represented in the Bahamas by an appointed Governor General. The Bahamas also holds membership in the United Nations and Organization of American States. <http://www.bahamaweb.com/offshore/government.htm>

The 1973 Constitution proclaims The Bahamas a sovereign democratic state; sets requirements for citizenship; guarantees fundamental human rights; establishes the executive, legislative, and judicial branches of government; and creates three civil commissions: the Public Service Commission, the Judicial and Legal Commission, and the Police Service Commission.

<http://countrystudies.us/caribbean-islands/123.htm>



Photo taken by Fred Bernard

The political system is based on the British Westminster parliamentary system. The Parliament comprises the House of Assembly and the Senate. Members of the House are elected directly every five years. The members of the Senate are appointed by the Governor General. The Prime Minister is the head of the Executive Branch of Government and heads a Cabinet of minimum 8 other Ministers, one being the Attorney General.

The Bahamian Judiciary is fully independent from the rest of the government. English Common Law forms the basis of the judiciary system although many Bahamian statutory elements have been added over the years. The Supreme Court is the main court in The Bahamas. Its decisions may be appealed before The Bahamas Court of Appeal. Final appeals may be presented to the Privy Council in London.

Local government in the Family Islands falls administratively under the Department of Local Government of the Ministry of Agriculture and Fisheries, and Local Government. The Family Islands are divided into nineteen districts administered by twenty-three commissioners appointed by the government and supervised from Nassau. Several of the larger islands with relatively greater populations are split up into several districts. In addition to the commissioners, elected House of Assembly members often deal with local matters, thereby filling the void created by the absence of an elected local government.

<http://countrystudies.us/caribbean-islands/123.htm>.

Under the Constitution, Parliament may make laws for the peace and good government of The Bahamas. Laws are generally enacted by Parliament in the following manner. A Bill is introduced in the House of Assembly, read three times, debated, and, if passed, becomes an Act. The Act is read three times in the Senate and then sent to the Governor General. The Governor General signs the Act, which upon being published in the official journal of the government becomes a law. Bills may officially be introduced in either house of Parliament, except for money bills, which may only be introduced in the House of Assembly, and may be passed with or without amendment, subject to the agreement of both houses.

<http://countrystudies.us/caribbean-islands/123.htm>

3.1.2 Existing Environmental Laws, Regulations, Policies and Guidelines

There are only a few existing environmental laws and regulations in The Bahamas relevant to the implementation of its requirements under the international environmental Conventions. The key laws and regulations and their applicability to the international environmental Conventions covering the thematic areas of the NCSA Project are identified in Table 3.1 and summarized below.

3.1.2.1 Environmental Health Act

The *Environmental Health Act* (1987) provides a general framework for developing environmental regulations in The Bahamas. The *Act* authorizes the DEHS to develop regulations that prevent and control air pollution, soil contamination, and preserve water quality.

i) Wastewater (Effluent) Discharges

Water quality laws and regulations are enforced by the DEHS and the WSC. The draft Environmental Protection (Effluent Limitations) Regulations, 1995 address primarily effluent discharges from sewage and industrial sources. The regulations state that no person shall cause or permit the discharge of any effluent, solid waste or sludge generated from any production or manufacturing process in or on any soil or surface of land without prior written permission of the

DEHS. Effluent discharges include sewage or industrial effluent and exclude storm-water. The limits also apply to discharges to inland waters, including any part of the sea that is within the most seaward (5.5 m or 18 ft) depth contour line offshore from the island. Discharges into coastal waters up to the 5.5 m depth contour are subject to specific effluent discharge limits established by DEHS. The Effluent Limitations Regulations strictly forbid the discharge of any flammable liquids, tar or other related liquids into inland areas or into the marine environment.

Permits must be obtained from the WSC for the installation of groundwater wells, extraction of water for domestic or commercial use, and disposal of sewage. The application process may require a developer to conduct hydrogeological investigations as well as to provide estimates of water requirements for construction, domestic, commercial, and emergency demands. The developer may also be required to include estimates of future water supply needs.

ii) *Air Quality/Atmospheric Emissions*

The draft Environmental Health Air Emissions Regulations are enforced under Section 31 of the *Environmental Health Act*. The Air Emissions Regulations require all projects/developments with associated emissions, depositions, or discharges of any regulated air contaminant to obtain permit approval by the Director of the DEHS prior to initiating discharges to ambient air.

iii) *Soil Contamination*

Soil contaminant levels are governed by regulations promulgated under the *Environmental Health Act*. The DEHS regulates and controls contamination of land and controls the methods for disposal of contaminated soil, and sets acceptable soil contaminant levels. These levels are determined by DEHS on a case-by-case basis, in conjunction with ERMA.

3.1.2.2 *Conservation and Protection of the Physical Landscape of The Bahamas Act*

Eleven tree species in The Bahamas are protected under the *Conservation and Protection of the Physical Landscape of The Bahamas Act* Number 12 of 1997. Harvest or removal of these species associated with any disturbance of landscape and vegetation requires a permit from the Department of Physical Planning. This Act also administers and regulates excavation and mining in coastal areas.

3.1.2.3 *Wild Animals Protection Act and Wild Birds Protection Act*

All wild animals and wild birds (including their eggs) are also protected under the *Wild Animals Protection Act* and *Wild Birds Protection Act* from any taking, capturing, or hunting activities. Written authorization is required for any taking or capturing of any wild animal or bird.

A permit is also required by the Agriculture and Fisheries Department for any potential disturbance of marine resources.

3.1.2.4 Existing Environmental Policies / Guidelines

Interim Environmental Impact Assessment (EIA) Guidelines for Projects Affecting Wetlands

Interim EIA guidelines are intended to be used within the context of the overall EIA process. They provide an approach for assessing the acceptability of a proposed project's impacts on wetland areas. The approach described in these guidelines is largely qualitative and leaves considerable latitude for best engineering practices and ecological judgement. The guidelines recognize that information currently available on the wetland areas of The Bahamas is incomplete. The following basic principles are reflected in the guidelines:

- the conservation of wetlands and their basic ecological functions is essential to the environmental and economic well-being of The Bahamas; and
- wetland management in The Bahamas will embrace the “wise use of wetlands” concept under the Ramsar Convention.

In general terms, the guidelines define wetlands, outline wetland functions and their value, provide criteria for defining acceptable impacts on wetlands, and outline an approach for the assessment of impacts on wetlands.

Acceptability Criteria for Proposed Projects Affecting Natural Areas

Acceptability criteria define the requirements of the GOB for projects located in natural areas. They are interim criteria intended to provide guidance in assessing proposed projects and the proposed siting of projects in areas without land use plans. Proposed projects that fail to meet these criteria are deemed environmentally unacceptable. Criteria are specified for environmental aspects including uniqueness and sensitive natural areas. Sensitive natural areas are defined as mangrove areas, aquifer recharge areas, coral reef areas, freshwater wetlands and steep slope upland areas.

Other Guidelines

The BEST Commission has provided other draft guidelines to assist proponents and other stakeholders in the preparation of environmental impact assessments for aquaculture and mariculture, agriculture and housing developments. While these guidelines are designed to be exhaustive, project proponents are ultimately responsible for ensuring that all environmental issues relevant to their project have been addressed in their EIA.

3.1.3 Existing International Environmental Agreements

Over the past several decades, the GOB has been a Signatory to many international environmental Conventions, Agreements and Protocols. Table 3.2 outlines some of the key Conventions, etc. and provides a brief description of each. The Bahamas signed four Conventions covered by the NCSA and identified in Table 3.2 as follows:

1. Convention on Biodiversity;
2. United Nations Framework Convention on Climate Change;
3. United Nations Convention to Combat Desertification;
4. Convention on Wetlands of International Importance Especially as Waterfowl (Ramsar Convention).

**TABLE 3.1
ENVIRONMENTAL LEGISLATION OF THE COMMONWEALTH OF THE BAHAMAS**

Title	Chapter	Act Title	Year Enacted	Applicability to Project
XX	196	<i>Water and Sewerage Corporation Act</i>	1976	Provides regulatory framework for the management of water resources in the Bahamas.
XXVII	232	<i>Environmental Health Act</i>	1987	Provides the framework for environmental regulations that will ensure compliance for the Project. <i>The Act</i> authorizes the DEHS to develop regulations that prevent and control air pollution, soil contamination, and preserve water quality.
XXVIII	242	<i>Agriculture and Fisheries Act</i>	1964	Agriculture and Fisheries Departments provides guidelines for the development of the area. The Minister of Agriculture and Fisheries may declare areas “protected.”
XXVIII	244	<i>Fisheries Resources (Jurisdiction and Conservation) Act</i>	1977	<i>Fisheries Resources Act</i> provides for conservation of fisheries resources of the Bahamas. Establishes exclusive fisheries zones and regulates harvesting of resources. <i>The Act</i> authorizes protected areas within exclusive fisheries zones, including land adjacent to it. Permission to fish within a zone is required; permission may include conditions necessary to conserve the resource.
XXX	248	<i>Wild Animals (Protection) Act</i>	1968	Prohibits the taking, capturing or hunting of any wild animal without a permit.
XXX	249	<i>Wild Birds Protection Act</i>	1952	Prohibits the taking, capturing or hunting of any wild bird without a permit. Protect birds and eggs during closed season.
XXX	250	<i>Plants Protection Act</i>	1916	Relates to plant disease and controls importation of plants to prevent outbreaks of exotic disease and establishment of unwanted species.
XXXI	260	<i>Conservation and Protection of the Physical Landscape of The Bahamas Act</i>	1997	Protects physical landscape from environmental degradation, flooding and removal of hills; regulates filling of wetlands, drainage basins or ponds; prohibits digging or removing sand from beaches and sand dunes; prevents harvesting or removing protected trees. In order to perform activities that may affect the physical landscape of The Bahamas, permits must be obtained for these activities. The Department of Physical Planning issues the permits and enforces the regulations (“Conservation and Protection of the Physical Landscape of the Bahamas Regulations, 1997).
XLVIII	391	<i>The Bahamas National Trust Act</i>	1959	Directs the Bahamas National Trust to promote permanent preservation of lands, buildings, underwater areas of beauty, and areas of natural interest. <i>The Act</i> also allows the Trust to identify sites for protection, and to administer areas declared protected.

**TABLE 3.2
INTERNATIONAL ENVIRONMENTAL CONVENTIONS, AGREEMENTS AND PROTOCOLS
TO WHICH THE BAHAMAS IS A PARTY**

Conventions/Agreements/Protocols	Objective	Concluded	In Force
Kyoto Protocol to the United Nations Framework Convention on Climate Change	To reduce greenhouse gas emissions by enhancing the national programs of developed countries concerned with this goal and by establishing percentage reduction targets for such countries.	16 March, 1998	(Not yet in force) Signed: 9 April, 1999
Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks	To encourage cooperation between States to ensure conservation and promote the objective of optimum utilization of fisheries resources both within and beyond the exclusive economic zone.	4 December, 1995	11 December, 2001
United Nations Convention to Combat Desertification	To fight desertification and minimize the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements.	14 October, 1994	26 December, 1996
United Nations Framework Convention on Climate Change	To achieve stabilization of greenhouse gases at a low level in the atmosphere in order to prevent dangerous anthropogenic interference with the climate system.	9 May, 1992	21 March, 1994
Convention on Biological Diversity	To develop national strategies for the conservation and sustainable use of biological diversity.	5 June, 1992	29 December, 1993
Cartagena Protocol on Biosafety	To protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology. It establishes an advance informed agreement (AIA) procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory.	29 January 2000	29 January 2000

TABLE 3.2 (Cont'd)
INTERNATIONAL ENVIRONMENTAL CONVENTIONS, AGREEMENTS AND PROTOCOLS
TO WHICH THE BAHAMAS IS A PARTY

Conventions/Agreements/Protocols	Objective	Concluded	In Force
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	To reduce transboundary movements of wastes consistent with the environmentally sound and efficient management of such wastes; to minimize the amount and toxicity of wastes generated; and to assist Lesser Developed Countries (LDCs) in environmentally sound management of the hazardous and other wastes they generate.	22 March, 1989	5 May, 1992
Montreal Protocol on Substances that Deplete the Ozone Layer, as amended	To protect the ozone layer by control of the production and consumption of the most commercially and environmentally significant ozone-depleting substances.	16 September, 1987	1 January, 1989
Vienna Protocol for the Protection of the Ozone Layer	To protect human health and the environment against the adverse effects resulting from human activities which modify or are likely to modify the ozone layer; and to establish protective control measures.	22 March 1985	22 September, 2001
United Nations Convention on the Law of the Sea (LOS)	To establish a comprehensive new legal regime for the sea and the oceans; to include rules governing environmental standards and enforcement provisions concerning pollution of the marine environment.	10 December, 1982	16 November, 1994
Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)	To protect certain endangered species from over-exploitation via a system of import/export permits.	3 March, 1973	1 July, 1975
Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)	To restrict the progressive encouragement on and loss of wetlands at present and in the future; to recognize the important ecological functions of wetlands and their economic, cultural, scientific and recreational value.	2 February, 1971	21 December, 1975

3.1.4 New Environmental Laws, Regulations,

The GOB, through BEST, drafted in 2000 a new *Environmental Planning and Protection Act* and various guidelines to enhance the conservation and protection of the environment of The Bahamas consistent with the goal of sustainable development.

3.1.4.1 Environmental Planning and Protection Act

As part of an institutional strengthening project in 2000, ICF Consulting recommended the creation of an entirely new Ministry of Environmental Planning and Protection under the portfolio of a Minister of Environmental Planning and Protection, having the responsibility of ensuring the integrated protection of the environment and ensuring the sustainable development of natural resources. The proposed Ministry would amalgamate the responsibilities of BEST, DEHS, the Department of Physical Planning and the Department of Land and Surveys. A draft Bill was presented to the GOB titled “*A Bill for an Act to Establish The Bahamas Ministry of Environmental Planning and Protection to Provide for Environmental Planning and Protection*”.

The Bill proposed to establish departments of Environmental Planning and Environmental Protection, and an Environmental Advisory Council to respond to request from the Ministry.

The Department of Planning would develop plans for the sustainable management of all land resources of The Bahamas, including both uplands and coastal areas. It would work cooperatively with other agencies such as The Bahamas National Trust, the departments of Agriculture and Fisheries, Water and Sewerage Corporation, etc. to develop plans for park management, surface water management, groundwater management and natural resource management. It would have three divisions:

- Land Use Planning Division with Crown Lands, Upland and Coastal Zone Management sections;
- Water and Wetlands Resource Management Division; and
- Parks Planning and Management Division.

The Department of Environmental Protection will be responsible for environmental emergency preparedness and prevention; environmental education, awareness promotion and outreach; the regulation, review and oversight of the environmental assessment program; issuing of environmental permits; the development of environmental objectives, standards, guidelines and regulations; environmental monitoring, etc. It would have the following divisions:

- Environmental Impact Assessment Division;
- Environmental Policy and Standards Division;
- Environmental Monitoring and Enforcement Division;
- Environmental Monitoring and Enforcement Division;
- Information Management Division;
- Division For International Environmental Agreements;
- Environmental Education, Awareness, Publicity, and Outreach Division.

The draft Bill was not accepted by the GOB, largely due to the costs involved in creating a new Ministry. As a result, the Bill has been revised to propose a Department of Environmental Planning and Protection. The Department would be smaller, only amalgamating the functions BEST and DEHS. The GOB Cabinet is currently reviewing the revised draft Bill and a decision is expected within months.

3.1.4.2 Environmental Impact Assessment Regulations

The Environmental Impact Assessment Regulations (Draft May 15, 2000) proposed (these are proposed and not promulgated as the Act has yet to be passed by Parliament and receive royal assent) under the *Environmental Planning and Protection Act* of 2002. The Regulations outline the purpose for the environmental impact assessment process, defines the roles, responsibilities and rights of project proponents, the proposed Ministry of Environmental Planning and Protection, and the public and interested parties. The Regulations also categorize projects subject to the EIA process and specifies the steps in the EIA process.

3.1.4.3 Pollution Control and Waste Management Regulations

The Pollution Control and Waste Management Regulations of 2000 were promulgated under the *Environmental Planning and Protection Act of 2000*. Part 2 of the regulations specify prohibitions on releases of certain hazardous wastes, contaminants and pollutants, including crankcase oil from motor vehicles, or vessels, battery acid, chlorine, ozone depleting substances and hazardous wastes. Part 3 establishes the ambient water quality and air quality criteria for The Bahamas. Permitting requirements for water quality and air quality discharges are specified in Part 4. Part 4 also stipulates that a Hazardous Waste Management Permit and Identification Number are required for the generation, transfer, acceptance, transport, import, export and operation of a hazardous waste storage treatment and disposal facility. Packaging and labelling standards are stipulated in Part 5, and Part 6 specify requirements for movement documents. Part 7 stipulates standards for storage, treatment and disposal facilities for solid and hazardous wastes, including monitoring, operating and closure/post closure care.

3.2 INSTITUTIONS

Responsibilities for environmental management, including resource management, in The Bahamas is shared among a wide range of government ministries, departments, agencies and organizations. These include:

- Office of the Prime Minister;
- Department of Lands and Surveys;
- Ministry of Health:
 - Department of Environmental Health Services (DEHS);
 - Bahamas Environment, Science and Technology Commission (BEST).
- Ministry of Labour and Immigration:
 - Department of Labour.
- Ministry of Public Works and Utilities (MOPW&U):
 - Department of Physical Planning
- Ministry of Agriculture Fisheries, and Local Government (MAF).

- Other Institutions:
 - Water and Sewerage Corporation (WSC);
 - Bahamas Agricultural and Industrial Corporation (BAIC).
- Bahamian Non-Governmental Organizations (NGOs):
 - The Bahamas National Trust.

Further details on the roles and responsibilities of these institutions are outlined in the following sub-sections.

3.2.1 Office of the Prime Minister

The Office of the Prime Minister ensures that the government's economic, environmental and sustainability policies are carried out. A Science Advisor, with responsibilities for environmental matters and an urban planner are also positioned at the Office of the Prime Minister. The Office is responsible for the Constitutional Review Commission and for relations with the BEST Commission, Public Utilities Commission, Bahamas National Trust, and the Department of Lands and Surveys. The Prime Minister also guides GOB's energy policies.

3.2.2 Ministry of Health and the Environment

This Ministry oversees the health care structure of The Bahamas, including environmental conservation in the interest of public health. The Ministry is responsible for regulating, monitoring, and controlling pollution. The Minister of Health administers the DEHS and the BEST Commission.

3.2.2.1 Department of Environmental Health Services (DEHS)

Under the *Environmental Health Act* of 1987, and the Environmental Health Regulations, the DEHS mandate is to promote and protect public health and ensure conservation and maintenance of the environment. From an environmental standpoint, the main role of the DEHS is to regulate, monitor, and control actual and likely contamination and pollution of the environment and establish minimum standards required for a clean, healthy, and pleasing environment. For proposed large projects, the DEHS evaluates the effectiveness of pollution control measures and initiatives to protect the health and safety of workers, and the natural environment. DEHS also issues the necessary effluent discharge and emissions permits. DEHS has created a new entity, the Environment Monitoring and Risk Assessment (ERMA) Division, formerly the Public Analyst, Laboratory attached to the DEHS, which has the responsibility for environmental monitoring.

The DEHS advises the Minister of Health and is advised by the Environmental Health Board, and also enforces environmental laws and regulations.

3.2.2.2 Bahamas Environment, Science and Technology (BEST) Commission

The BEST Commission, formed by a directive from the Chief of State in 1994, has in effect been the country's environmental agency since 1995. BEST has no regulatory powers, but is responsible for developing GOB's environmental and natural resource management policies. As mandated, the BEST Commission is responsible for the administration of the EIA process, overseeing the technical review of EIAs, coordinating the public review of EIAs, and providing advice to Cabinet for consideration in their decision-making process.

BEST is also the lead agency in ensuring that the GOB implements its requirements under the various international Conventions on environmental matters such as biodiversity, climate change, wetlands, land degradation, etc. In this role, BEST establishes committees, drawing on appropriate staff from different government agencies, for promoting actions to implement the specific requirements of the various conventions. To date, committees have been struck on wetlands, climate change and biodiversity. Also, BEST is mandated to secure funding under the Conventions for projects that support their implementation and is the focal point for GEF in The Bahamas.

Working in conjunction with BEST is an Ambassador to the Environment, appointed by the government of the day.

The BEST Commission also collaborates closely with other government agencies with responsibilities for environmental matters such as the Water Resources Unit, Ministry of Agriculture and Fisheries and Department of Meteorology, and The Bahamas National Trust.

3.2.3 Ministry of Labour and Immigration

The Ministry of Labour and Immigration oversees labour relations and occupational health and safety, through the Department of Labour. The Department is the lead agency for regulating occupational health and safety under the *Health and Safety at Work Act* (2002). Through its Inspection Unit, the Department also conducts inspections to insure adequate worker safety and compliance with regulations.

3.2.4 Ministry of Public Works and Utilities (MOPW&U)

The MOPW&U oversees and maintains physical infrastructure and the environment. It is entrusted with the administration of the *Building Control Act (BCA)* and Regulations, sharing responsibility with the Ministry of Health and Environment, and is also entrusted with the preparation of land use plans and physical planning activities. MOPW&U issues water supply franchises to developers in areas where the supply of water is impractical for GOB or its agencies to undertake.

3.2.4.1 Department of Physical Planning

The Department authorizes activities such as dredging, filling, harvesting or removal of protected trees, and any work that will affect coastlines.

3.2.5 Ministry of Agriculture, Fisheries and Local Government

The Ministry of Agriculture (Incorporation) Act, 1993 gives the Minister of Agriculture authority to hold, lease, and dispose of agricultural land. The Department of Agriculture oversees conservation of wild animals, birds, and plants, as well as forest health. The Ministry has the mandate to enforce the *Fisheries Act*, including arrest and seizure powers, authority that is currently shared with the Coast Guard. Under the previous Caribbean Planning for Adaptation to Global Climate Change (CPACC) project, the Department of Fisheries was responsible for coral reef monitoring, and is currently participating in some of the BEST Commission's sub-committees on international environmental Conventions such as wetlands and biodiversity.

3.2.6 Water and Sewerage Corporation (WSC)

The WSC, with its Water Resources Management Unit (WRMU) has responsibility for optimal development of the country's water resources and the control of water quality. It shares (with DEHS) the responsibility for monitoring water quality.

3.2.7 The Bahamas National Trust

The Bahamas National Trust was created by an *Act of Parliament* in 1959. The mandate of the trust is to conserve and protect the natural and historic resources of The Bahamas. The Trust in some ways was the first environmental agency in The Bahamas and continues to work with BEST and others on environmental aspects and is represented on all of the committees struck by BEST to address compliance with international environmental Conventions. The Trust is responsible for establishing and developing the national park system and protected areas, as well as protecting the biodiversity of the country's unique ecosystem.

Table 3.3 lists the key government institutions discussed above and identifies the NCSA thematic area(s) in which they have responsibility. The table shows a fair degree of overlapping responsibilities, an issue discussed later in Chapter 5.

3.2.8 Committees and Working Groups

The BEST Commission has instituted various committees to develop national policies and strategies specific to the various Conventions. At present, committees have been struck on biodiversity, climate change, wetlands and science and technology. The committees comprise representatives from all agencies with mandates affecting these thematic areas, as well as representatives from the public. These committees are completely voluntary and their members generally have full-time jobs while many committee members are very dedicated and contribute significant time and efforts to assigned tasks, others are sometimes unable or unwilling to do so. However much has been accomplished by the committees in spite of this.

Several initiatives have been successfully completed regarding biodiversity including a National Invasive Species Strategy (NISS) and a National Biodiversity Strategy and Action Plan (NBSAP). Activities underway include a National Biosafety Framework (NBF) and National Biosecurity Strategy (NBS). A grant was received under the Ramsar Convention in June 2004 to assist the National Wetlands Committee in preparing a wetlands policy. Thus far, the Committee has held stakeholder consultations throughout most of The Bahamas. The National Climate Change Committee has prepared a draft policy document that is currently in the review stage. A recent workshop on land degradation was convened by BEST.

**TABLE 3.3
INVOLVEMENT OF GOVERNMENT INSTITUTIONS IN THEMATIC AREAS**

Government Institutions	Thematic Areas			
	Biodiversity	Climate Change	Land Degradation	Wetlands
Office of the Prime Minister	✓	✓	✓	✓
Ministry of Health and the Environment	✓	✓	✓	✓
Department of Environmental Health Services	✓	✓	✓	✓
BEST Commission	✓	✓	✓	✓
Ministry of Public Works and Utilities			✓	
Department of Physical Planning	✓		✓	✓
Ministry of Agriculture, Fishing and Local Government	✓	✓		
Water and Sewage Corporation				✓
The Bahamas National Trust	✓		✓	✓

Responsibilities for environmental management, including resource management, in The Bahamas is shared among a wide range of government ministries, departments, agencies and organizations. These include:

- Office of the Prime Minister
 - Department of Lands and Surveys – **B, CC, LD, W**
- Ministry of Health
 - Department of Environmental Health Services (DEHS) –**B,CC, LD, W**
 - Bahamas Environment, Science and Technology Commission (BEST) - **B, CC, LD, W**
- Ministry of Public Works and Utilities (MOPW&U) –
 - Department of Physical Planning - **B, CC, LD, W**
 - Subdivisions – **B, LD, W**
 - Buildings Control – **B, LD, W**
- Ministry of Agriculture, Fisheries, and Local Government (MAF)
 - Department of Agriculture – **B, LD,**
 - Department of Fisheries – **B, CC, W,**
- Water & Sewerage Corporation – **CC, W**
- Bahamian Non-Governmental Organizations (NGOs)
 - The Bahamas National Trust – **B, LD, W**

Thematic Areas:

**B (Biodiversity);
CC (Climate Change);
LD (Land Degradation); and
W (Wetlands).**

4.0 KEY GAPS AND DEFICIENCIES

The NCSA report, prepared under separate cover, details the key capacity deficiencies facing The Bahamas in terms of meeting its requirements under international environmental conventions, and more generally for environment management. These are summarized below for establishing the basis/need for the action plan described later in Chapter 5. The key gaps and deficiencies may be summarized as follows:

- **Legislation (Laws and Regulations):**
 - For the most part, The Bahamas lack the types of laws and regulations necessary to implement the international environmental Conventions to which it is a Signatory.
- **Policies and Guidelines:**
 - Existing guidelines are not officially approved by government and are mainly procedural in nature e.g., EIA guidelines for wetlands.
- **Institutions:**
 - The Bahamas does not have an environment ministry or department with a clear mandate and responsibilities for all aspects of environmental planning and protection;
 - in the absence of a central coordinating agency, there appears to be a degree of jurisdictional conflict and misunderstanding between the various agencies with responsibilities for the environment; and
 - the disaggregation of responsibilities is confusing to both Bahamians and outsiders.
- **Financial Resources:** The lack of financial resources is reflected in the inability of institutions to:
 - provide ongoing training to staff to improve their knowledge, abilities and skills;
 - hire the full complement of staff required;
 - purchase the necessary material requirements such as buildings, offices, vehicles and up-to-date computers; and
 - Undertake long-term planning.
- **Human Resources:** Institutions are hampered by a shortfall in staffing. The shortfall in staffing has resulted in:
 - many institutions utilizing staff in multiple areas, including areas in which they have no formal training; and
 - hindrance in the execution of many important functions, including policy development, monitoring and enforcement.

- ***Family Island Services:***
 - environmental Management functions, including monitoring and enforcement, are highly centralized on New Providence Island;
 - many key institutions do not have resident officers in the Family Islands and as a result, this reduces the quick response capability in the Family Islands; and
 - considerable time and costs are expended for travel to the Family Islands.

- ***Training:***
 - a lack of financial resources at the systemic and institutional levels;
 - permission for involvement in training, in particular international workshops, is most often granted at the ministerial level, and not at the institutional level, where training needs are best assessed;
 - due to understaffing, managers are reluctant to “lose” staff time through training; and
 - a lack of learning plans and a specific environmental management training program.

- The inability to effectively participate in training results in lost opportunities:
 - to improve skills through exposure to new technologies, procedures, research, etc.;
 - for networking with professional peers; and
 - for gaining recognition by sharing expertise through presentation of and participation in training activities both locally and internationally.

- ***Information Management:***
 - there appears to be no mechanism or procedures in place for ensuring that when requested, legitimate information is expeditiously transferred to the institution requesting it;
 - many institutions do not have libraries, or even a system for documenting and filing important information;
 - seems easier for staff with internet access to obtain information from international institutions, than from local institutions; and
 - significant volumes of important information, including reports, datasets, etc. reside in the offices of individuals.

- ***Compliance and Enforcement:*** The following issues were identified:
 - a lack of new and/or updated regulations with “teeth” specifically geared to implement the requirements of the international environmental Conventions;
 - insufficient trained field officers in the areas of investigations and enforcement;
 - insufficient material hardware including vehicles, watercraft, etc. dedicated to compliance and enforcement activities;

- lack of coordination between agencies with shared jurisdiction in areas such as fisheries protection; and
- due to the jurisdictional misunderstandings, the general public often fails to establish contact with the appropriate authority in the crucial first minutes or hours after an offence is deemed to occur.

5.0 ACTION PLAN

This chapter discusses the various components of an action plan that would allow the GOB to address the key capacity difficulties facing The Bahamas and to place the country on the right path towards meeting its commitments under the various international environmental Conventions. The proposed time-frame for implementation of the various actions range from immediate (within six months), short-term (1-3 years), medium-term (3-5 years) and long-term (5+ years) as shown on Table 5.1. Each of these action items are discussed in turn below.

**TABLE 5.1
IMPLEMENTATION TIME-FRAME FOR ACTION ITEMS**

Action Item	Time Frame			
	Immediate	Short-Term (1-3 years)	Medium-Term (3-5 years)	Long-Term (5+ years)
Adopt National Environmental Policy	✓			
New Environmental Legislation	✓			
New Environment Department and Ministry	✓ (for new department)			✓ (for new ministry)
New Governance Structure		✓		
Blueprint for Environmental Management		✓		
Implementation of Blueprint				
- Regulations		✓	✓	✓
- Policies and Guidelines		✓ (thematic areas)	✓	✓
- Institutions	✓ (for new department)			
- Financial Resources		✓	✓	✓
- Human Resources	✓ (for new department)	✓	✓	✓
- Family Island Services		✓	✓	✓
- Training	✓	✓	✓	✓
- Information Management		✓	✓	✓
- Compliance and Enforcement		✓	✓	✓

5.1 ADOPT NATIONAL ENVIRONMENTAL POLICY (NEP)

A draft NEP was prepared by SENES and tabled for discussion as part of the NCSA NEMAP workshop held in Nassau on April 5-6, 2005. A key outcome of the workshop was consensus of the workshop participants that the GOB needed to articulate an over-arching national policy on the environment, in the form of a NEP. The NEP will articulate the vision, goals and objectives (or strategic outcomes) and basic principles of the Government with respect to its commitment for the conservation, protection and enhancement of the environment of The Bahamas. It will also set the context and guidance for establishing environmental laws, policies and programs. The draft NEP was finalized after incorporating the comments of the workshop participants and is appended to this report as Appendix A.

The following key actions were formulated with respect to the NEP that was tabled.

- That the NEP be circulated for broad public consultations. The document should be made available for public comment through a variety of means including the BEST web site, civic organizations, presentations at the College of The Bahamas, newspaper advertisement or supplement.
- That a strict timeline, preferably 45 days, be set for public comment on the NEP.
- After incorporating public comments, the draft NEP should be forwarded to the GOB for approval within six months from the conclusion of the workshop.

5.2 NEW ENVIRONMENTAL LEGISLATION

A high performing environmental regulatory system will enable The Bahamas to ensure that the environment is protected while balancing the interests of business to compete and innovate; meeting the needs of consumers for a wide variety of goods and services; and providing the general public with an opportunity to contribute to a healthy and productive environment. Achieving this balance in our current rapidly changing society and its needs is becoming ever so complex.

It is recommended that the GOB immediately take the necessary steps to approve the draft Bill to create a Department of Environmental Planning and Protection through the passage of a legislative Act. New environmental regulations and policies could then be made pursuant to the Act that focus on the four thematic areas and complement existing regulations and policies.

5.3 NEW ENVIRONMENT DEPARTMENT AND MINISTRY

As part of an institutional strengthening project for BEST, ICF Consulting, in June 2000, submitted a report outlining a preliminary institutional design and budget for a Ministry of Environmental Planning and Protection, amalgamating the responsibilities of DEHS, BEST, the Department of Lands and Surveys and the Department of Physical Planning. The report details the

institutional structure of the Ministry, provides year one and annual workload estimates in terms of person-months for technical and management staff, and preliminary budget including annual salaries, capital acquisitions and allowances.

The initial proposal has been adapted to one that would create a Department of the Environment that is smaller than the Ministry as it does not include the Department of Physical Planning and Land and Surveys. The new proposal has been presented as a Bill to the GOB and is currently awaiting cabinet approval.

It is recommended that the GOB takes the necessary immediate steps to approve the draft Bill to create a Department of Environmental Planning and Protection. This, however, should be considered as a first step toward the ultimate long-term goal of creating a Ministry of the Environmental Planning and Protection. The new Department should have a clear mandate and be the designated lead agency for all aspects of environmental management in The Bahamas, including aspects relating to the implementation of international environmental Conventions. This will eliminate the apparent jurisdictional conflicts that currently exist between BEST, DEHS, etc. An initial step could be to establish agreements (Memoranda of Understanding (MOUs)) among ministries and departments to clarify roles and responsibilities, accountabilities and governance structures.

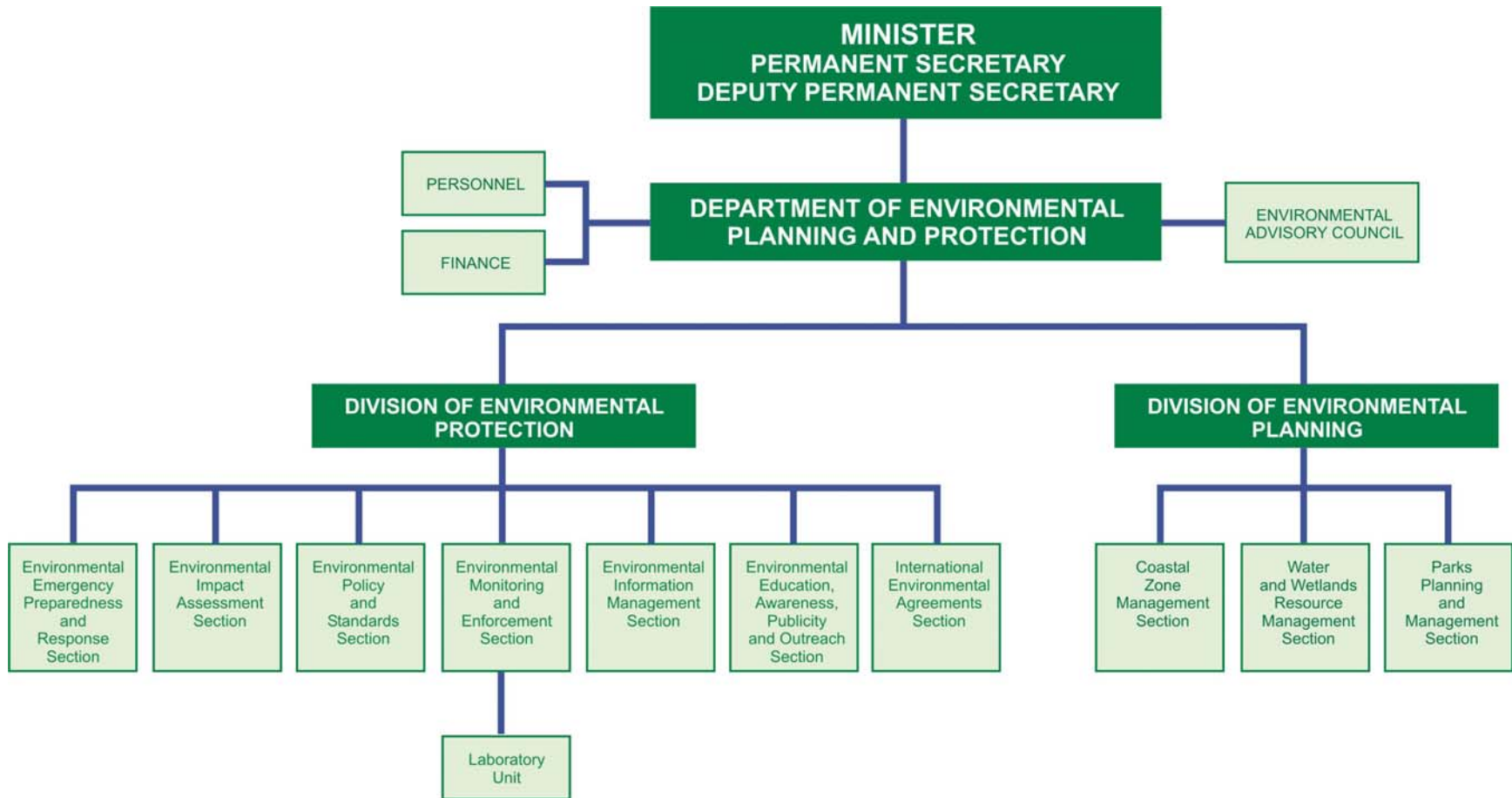
The Department could be structured as shown on Figure 5.1. However, to be effectively functional, the Department needs to be properly funded and staffed as discussed below.

5.4 NEW GOVERNANCE STRUCTURE

It is recommended that a new governance structure for environmental management be established in The Bahamas in the short-term. The new structure would entail the following components:

- A Cabinet Committee on the environment which should include, but not restricted to, the Ministers of Health, Public Works, Education, Agriculture and Fisheries, Trade and Industry, Finance, National Security as well as Ministers responsible for Lands and Surveys, and investments. The Committee should be chaired by the Minister responsible for the environment or a National Environmental Council made up of Cabinet Ministers, using the existing National Economic Council as a model.,
- A national multi-stakeholder committee, possibly made up of Permanent Secretary level employees; and
- Technical thematic subcommittees should be maintained. Technical subcommittees could recommend priorities and send these onward to Cabinet through the relevant Permanent Secretary.

**FIGURE 5.1
DEPARTMENT STRUCTURE**



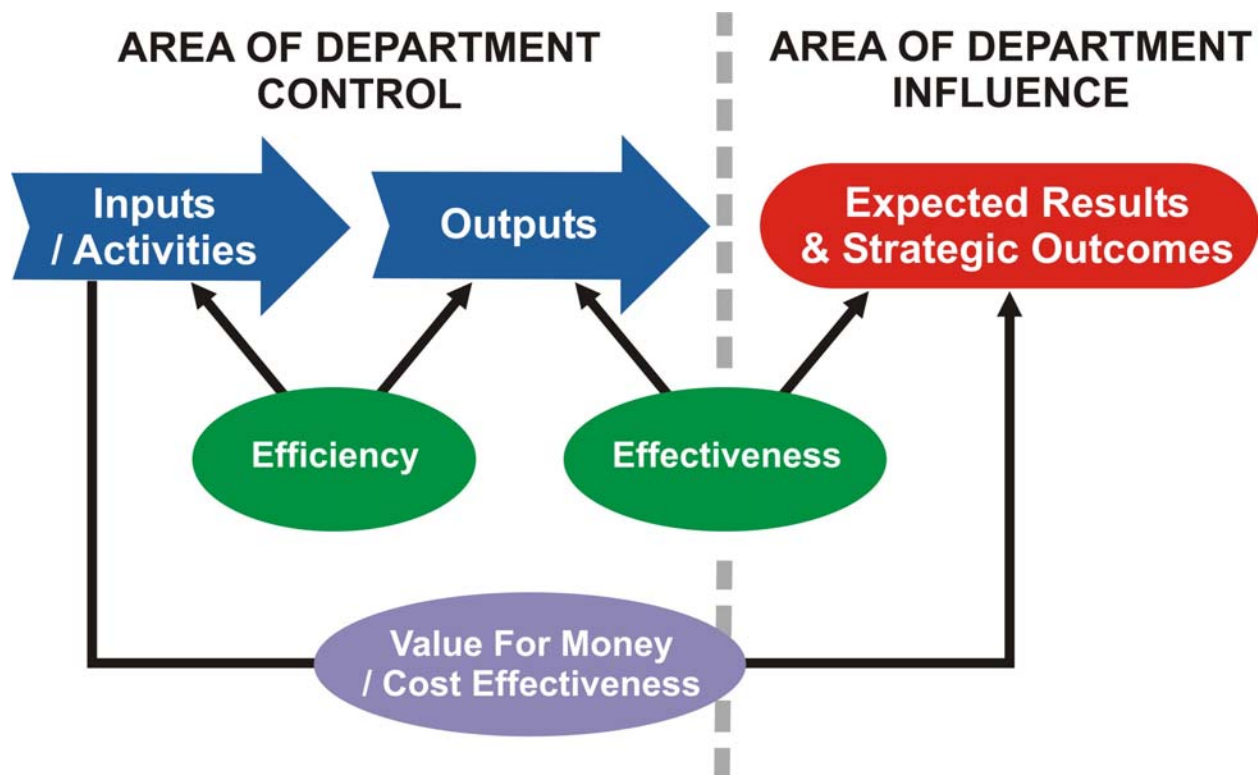
Note that EIA is a planning tool and may best be placed in the division of environmental planning

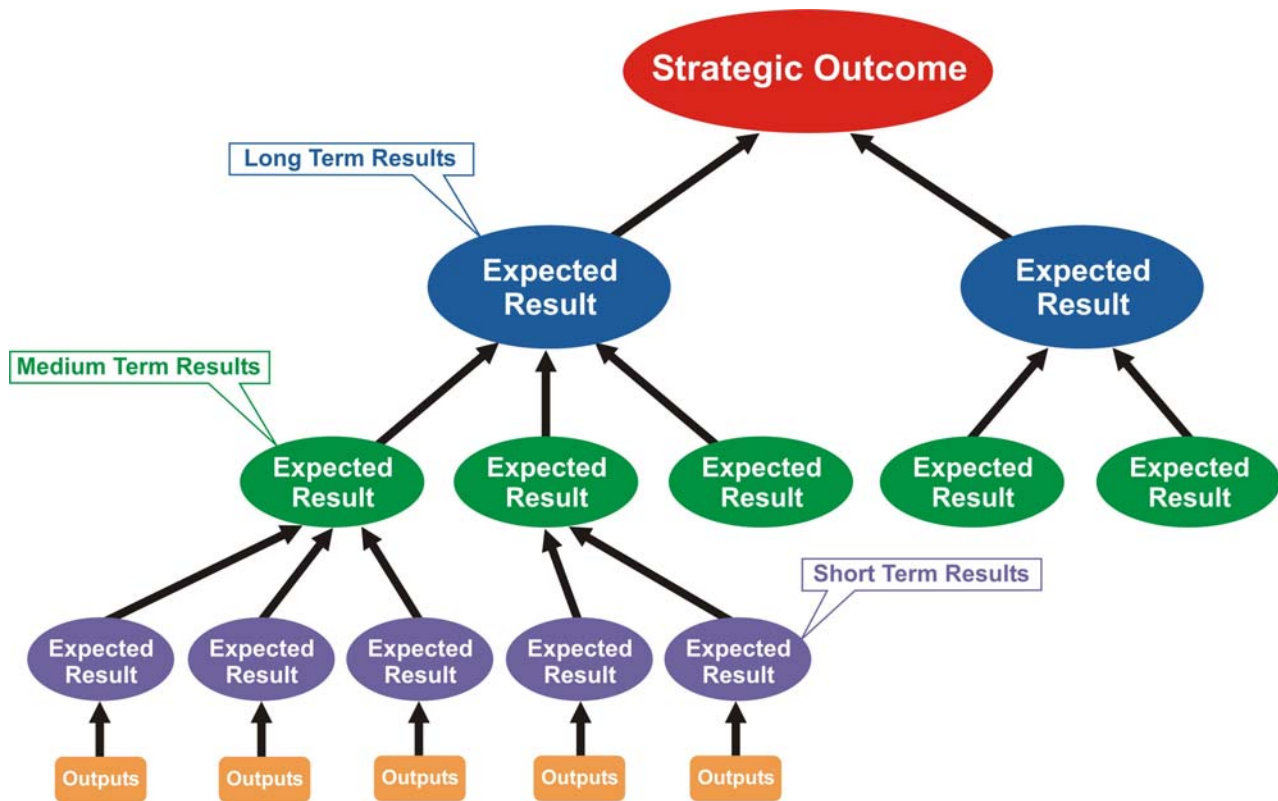
5.5 BLUEPRINT FOR ENVIRONMENTAL MANAGEMENT

A Blueprint for environmental management is proposed for The Bahamas. The proposed blueprint for The Bahamas Environmental Management Programme (BEMP) should provide managers a concise statement or road map to plan, monitor, evaluate and report on the results throughout the lifecycle of the BEMP. The Blueprint includes three core components: (i) Program Profile; (ii) Expected Results; and (iii) Monitoring and Evaluation.

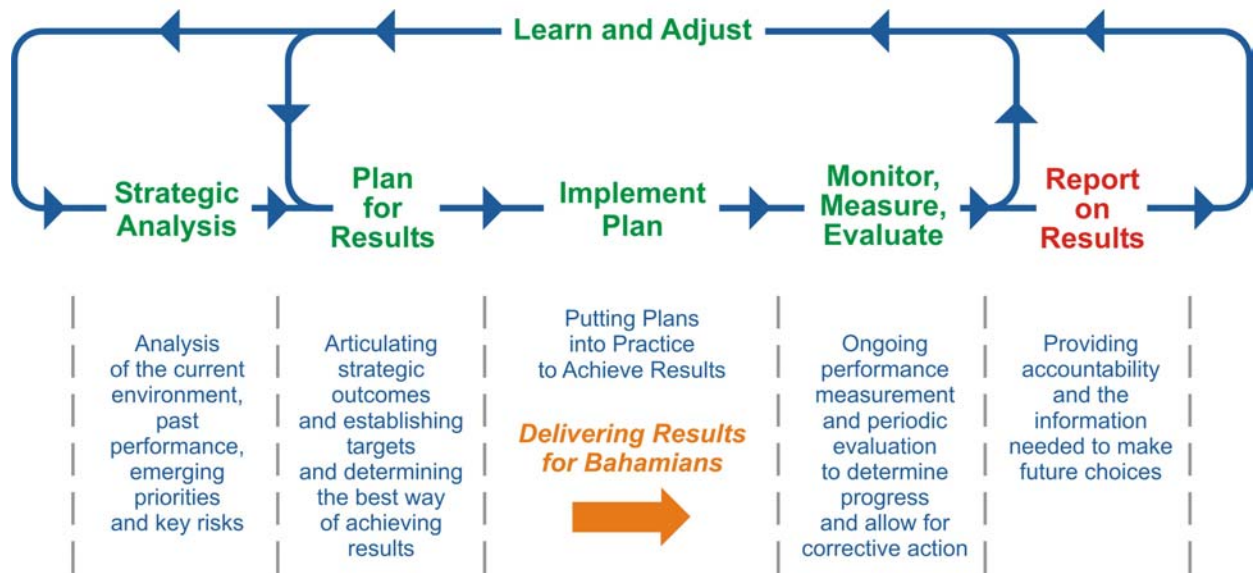
The Program Profile provides a description of the program's origin, beneficiaries and regulated parties, delivery approaches and strategies, resources, governance structure and planned results).

The Expected Results component represents the focal point of the blueprint providing a graphic representation of the causal or logical relationships (i.e. Logic Model) between activities and the outputs and outcomes (i.e. results) that the BEMP is intended to produce, as shown below. A good logic model validates the theory behind the BEMP and represents the first step in developing realistic and relevant performance measurement and evaluation strategies and activities.





The monitoring and evaluation plan represents the government’s strategy to monitor performance and demonstrate results of the BEMP, as shown in the graphic below. The monitoring or performance measurement strategy enables managers to establish the necessary systems and processes to collect and analyze data and information so that the BEMP’s performance can be optimized. Evaluations generate accurate, objective and evidence-based information to help government managers to make sound management decisions, demonstrate success, show ongoing relevance and develop more effective and cost-efficient alternatives to service delivery that provide ongoing benefits to Bahamians.



A draft Blueprint document (formerly called Project Activity Architecture (PAA)) was prepared by SENES and presented at the April 5-6 NEMAP workshop in Nassau. Workshop participants reviewed and provided comments on the document in a break-out session. Based on these comments, the document was revised and is appended to this report as Appendix B. In addition, the following key actions were formulated with respect to the Blueprint:

- The Blueprint be circulated for targeted public consultation with government agencies and technical officers. Consultations should be limited by a strict timeline, preferably 45 days.
- After incorporating public comments, the draft Blueprint should be forwarded to the GOB for approval within the next 1-3 years.

5.6 IMPLEMENTATION OF BLUEPRINT

5.6.1 Regulations

There is a lack of adequate environmental regulations in The Bahamas, and particularly in the four thematic areas of biodiversity, climate change, land degradation and wetlands. Many of the relevant acts are old and require updating. In light of this, some legislation have been updated such as the Wildlife Conservation and Trade Act (2004). Other acts, such as the *Animal Control Welfare and Welfare Act* and the *Plant Protection Act* are undergoing revisions. However, based on the institutional interviews and workshop, and the public consultations, it is determined that regulations are still required in several key areas. Given the large number of regulations to be drafted, a phased approach is proposed for their development using a prioritized list of high, medium and low as shown in Table 5.2.

**TABLE 5.2
PRIORITY LISTING OF REGULATIONS FOR THE BAHAMAS**

Regulations	High Priority	Medium Priority	Low Priority
Chemical management and safety	X		
Occupational health and safety		X	
Biosecurity		X	
Land use and development		X	
Coastal zone management	X		
Wetlands	X		
Water resources management	X		
Use of natural and genetic resources			X
Habitat/Resource conservation and recovery	X		
Energy Industry			X
Site remediation	X		
Noise		X	
Coral reefs	X		
Endangered Species			X
Climate Change	X		

It is recommended that depending on available funding, the high priority regulations be completed first, followed by the medium and then the low priority.

It is proposed that each regulation be drafted primarily by a three-member team consisting of one senior technical expert/specialist, a regulatory expert experienced in drafting regulations and a junior staff member to collect background information and documentation. Table 5.3 estimates the person-days by specialist, and cost for drafting each of the regulations (in \$US).

**TABLE 5.3
COST ESTIMATE FOR DRAFTING EACH REGULATION**

	High Priority	Noise Specialist	Land Use Specialist	Site Remediation Specialist	Hazardous Substances Specialist	Natural Resource Specialist	Water Resources Specialist	Biodiversity Specialist	Occupational Health and Safety Specialist	Mining Specialist	Reg. Specialist	Junior Staff with Various Specializations	Cost Per Regulation \$US (x000)
1	Chemicals Management and Safety				7						8	12	25
2	Coastal Zone Management					6					6	12	20
3	Wetlands					6					5	10	20
4	Water Resources						10				8	8	25
5	Habitat/Resource Conservation and Recovery					6					5	10	15
6	Site Remediation (new)			6							5	12	20
7	Coral Reefs							7			6	12	20
8	Climate Change						5				5	10	15
	Medium Priority												
1	Occupational Health and Safety								8		8	9	20
2	Biosecurity						8				6	12	20
3	Land Use and Development		10			6					8	10	30
4	Noise	7									5	7	15
	Low Priority												
1	Use of Natural and Genetic Resources							6			6	8	15
2	Energy Industry		5								5	8	15
3	Endangered Species							7			8	10	20

5.6.2 New Policies and Guidelines

Policies

To effectively implement its requirements under the international environmental Conventions, The Bahamas needs to formulate national policies and guidelines to guide their implementation.

As was noted earlier, draft policies have been or are being developed for biodiversity, climate change and wetlands. In addition to development of the Bahamas Biodiversity Data Management Plan of 1997, The Bahamas Biodiversity Strategy and Action Plan of 1998, and National Invasive Specific Strategy of 2002, The Bahamas is currently undertaking the development of a National Biosafety Framework (NBF). The objective is to develop a national policy specifically addressing biosafety that will protect the country's environment and biodiversity. Thus, overall, policies on biodiversity are well established.

Similarly, policies on climate change established through the First National Communication on climate change are being further strengthened through the policies currently being developed as part of a National Policy for Adaptation to Climate Change.

The National Wetlands Committee is currently undertaking country-wide consultations to develop a National Wetland Policy under a grant provided by the Ramsar Convention in June 2004.

It is recommended that the National Wetland Policy should at least:

- specify the legal and institutional framework assigning responsibilities for the implementation of the National Wetland Policy;
- identify the wetland resources of The Bahamas;
- outline the GOB commitment to wetland conservation and protection;
- specify a programme for education, public awareness and training;
- specify a management programme for publicly-owned wetlands;
- develop a protected wetlands programme; and
- develop a strategy to encourage research in wetlands conservation.

Of the four thematic areas, policies/programmes on land degradation are the least developed. In fact, The Bahamas does not have a national policy on land degradation. A recent BEST workshop, held November 23-24, 2004, was the first major action taken by The Bahamas to raise awareness to the Convention to Combat Desertification. It is recommended that The Bahamas, through BEST or a new Department of Environmental Planning and Protection, build on the results of the recent workshop to develop an action plan on land degradation. The action plan should at least:

- identify the key local institutions and their responsibilities under the Convention;

- specify a list of activities to be completed by the GOB and government institutions/agencies;
- specify roles for, and avenues for collaboration with non-governmental organizations (NGOs);
- develop a public awareness programme to reach all of inhabited islands of The Bahamas;
- identify and prioritize projects to be undertaken to meet The Bahamas commitments under the Convention;
- identify funding resources both locally and internationally for implementing the projects; and
- develop an appropriate time schedule for completing each of the action items.

Guidelines

As noted earlier, BEST has developed Interim EIA Guidelines for projects Affecting Wetlands, draft guidelines to aid proponents in the preparation of EIAs for agriculture, mariculture, aquaculture and housing development projects, and Acceptability Criteria for Proposed Projects Affecting Natural Areas. It is recommended that all draft guidelines be finalized and formalized as part of the EIA process.

Additional guidelines should be drafted covering extractive processing, energy industries, industrial operations and manufacturing. These additional guidelines are necessary to provide coverage for the full range of activities that are likely to impact on the four thematic areas. It is recommended that the guidelines be drafted according to the priority classification in Table 5.4. The estimated person-days by specialist and costs (in \$US) for preparing each of these guidelines are shown in Table 5.5. Similar to the new regulations, the new guidelines can be drafted by a three member team consisting of one senior technical expert in the area covered by the guideline, an expert experienced in drafting guidelines, and a junior staff member to collect background information and documentation.

**TABLE 5.4
PRIORITY LISTING OF EIA GUIDELINES FOR THE BAHAMAS**

EIA Guidelines	High Priority	Medium Priority	Low Priority
Extractive processing	X		
Energy industries		X	
Industrial Operations			X
Manufacturing			X

**TABLE 5.5
COST ESTIMATE FOR DRAFTING GUIDELINES**

	High Priority	Noise Specialist	Land Use Specialist	Site Remediation Specialist	Hazardous Substances Specialist	Natural Resource Specialist	Water Resources Specialist	Biodiversity Specialist	Occupational Health and Safety Specialist	Mining Specialist	Reg. Specialist	Junior Staff with Various Specializations	Cost Per Regulation \$US
1	Extractive Processing									5	2	15	\$14,650
2	Energy Industries		7		7						2	10	\$18,960
3	Industrial Operations				7						2	10	\$13,010
4	Manufacturing								8	2	2	12	\$16,440

5.6.3 Financial Resources

Stable funding is an essential component of environmental management. Funding for Environmental Management in The Bahamas is currently received from three major sources:

- government;
- outside sources, mainly international institutions such as GEF and UNDP; and
- large development projects.

Government Funding

Government funding for environmental management is dispersed among a wide variety of institutions, departments, agencies including BEST, DEHS, BNT, several ministries etc. The funds are utilized for a broad variety of activities ranging from staffing, purchase of equipment, workshops, environmental monitoring, etc. Due to the fact that the funds are so widely dispersed, it is most difficult to accurately determine the total expenditure on environmental management in The Bahamas. Establishing an environmental Department, with dedicated funding streams, will allow for a more transparent and accurate accounting of financial resources spent on environmental management. It is understood that some other agencies, such as the Ministry of Agriculture, Fisheries and Local Government will have responsibilities for environmental management, and will require funding for that purpose; however, these additional funds can then be more easily added to the majority of the funding that has been consolidated within the single Department.

Based on the costs generated by ICF, it is estimated that the budget for staff remuneration for a fully established Ministry of the Environment will be approximately \$6,231,500, extrapolated to \$5,323,500 for the Department. The recommended staffing for the Ministry was 274. This is extrapolated to about 230 staff for a Department. Additional costs will be incurred for personal emoluments and allowances, rents, communication, utilities, capital acquisitions, etc.

It is recommended that these initial funds be allocated in the short-term to create the new Department of Environment.

Outside Funding Sources

While the funding structure outlined above is designed to cover all aspects of the Department's operations, there will be ongoing opportunities to obtain additional funding under the various international environmental Conventions for specific projects related to their implementation. In the past, funding has been secured through the World Bank, GEF and UNDP. However, funding commitments are needed from the GOB to support these projects in the long-term, particularly

after international funds have been exhausted. Further, as the standard of living in The Bahamas continues to improve, access to such international funding becomes more limited; hence, the need for increased stable funding from the GOB.

Funding from Large Development Projects

In some instances, depending on the complexity of the project, the GOB has negotiated financial agreements with proponents of large industrial projects for the purpose of securing the services of international experts to assist BEST in the review of environmental impact studies and supporting technical documents, Environmental Management Plans (EMPs), and for undertaking public consultation activities, etc. While this type of funding may be significant on a single project basis, these types of agreements are an exception, rather than the rule, and thus does not ensure stable funding.

Taking into consideration the uniqueness of The Bahamas, the fragility of its environment, its limited natural resources and the ever-increasing development pressures, it is recommended that the GOB enact legislation to institute a funding mechanism whereby developers contribute to the costs of environmental management, including review of the EIA documents, environmental monitoring, environmental investigations, etc. The incorporation of a cost-recovery mechanism would provide the GOB, through the Department of Environment, a funding mechanism that is capable of responding to changes in development activity, such as a lengthy public review process. It is recommended that the GOB assess the following models to determine which single model or a combination of models is most suitable to the needs of The Bahamas.

- Model 1 - An environmental levy based on a set percentage, say 1%, of the capital cost of the proposed project. The levy will be applied to all projects requiring an EIA.
- Model 2 - An emission discharge levy on all operating facilities with air and water emissions higher than a stated threshold limit. The levy could be on a per ton basis, beyond the stated threshold.
- Model 3 - An annual environmental charge based on the type and size of commercial and industrial facilities. For example, all hotels with 250 rooms will pay the same annual charge.
- Model 4 - A permit review charge to be applied to all new facilities based on the number of emission sources to be reviewed at the facility as part of the permitting process. For example, there will be a single charge for

reviewing a noise impact study, a separate charge for reviewing studies relating to water discharge sources and separate charges for review of studies on air emissions sources.

5.6.5 Human Resources

As reported earlier, a staffing level of 230 should enable the new Department of Environmental Planning and Protection to meet its obligations. However, additional staff are required within other agencies such as Land and Surveys, BNT, Department of Fisheries that carry out environmental activities and functions supporting the implementation of the Conventions and the NEAP and NEMAP. Any staffing increase or redeployment program should include a strategy to locate permanent staff in all of the major islands, and to deploy other staff geographically such that they can best serve groups of neighbouring islands.

5.6.6 Family Island Services

The major problem affecting Family Island services is the centralization of staffing and other resources in New Providence. While recognizing that the GOB faces special challenges due to the large number of islands to be serviced, and the sparse populations on some of these islands, it is recommended that the number of permanent staff, in particular environmental, fisheries and wildlife protection officers, be increased in the Family Islands. The deployment of staff should be strategic, designed to locate permanent staff on all major islands and other staff to serve groups of islands based on geography. The increased visibility of enforcement officers will help to deter polluters, enable more rapid responses to environmental infractions such as poaching and dumping, and enable the local populations to develop a sense of attachment to the regulatory agencies and their decision-making processes.

Involvement of the Family Island residents is critical for ensuring the conservation and protection of resources. This is especially so with the centralization of functions in New Providence. Over-centralization could result in their alienation from the environmental management process, and a loss of their invaluable knowledge and input on local ecosystems.

5.6.7 Training

It is recommended that stable additional financial resources be made available for training. The assessment of training needs and approval for training should be completed at the institutional level and not at the ministerial level. Immediate managers and supervisors are best placed to assess the training needs of their staff. It is also recommended that learning plans be developed and a competency-based environmental management training program be developed and implemented over about a two-year period. This will include the development of a training module and pilot test. E-learning could be utilized to reduce cost. The estimated cost per

module is between \$US 25,000 – 40,000, thus 6-8 modules will cost about \$US 150,000 – 250,000 per year or \$US 300,000 – 500,000 for two years. An additional \$US 50,000 or so will be required for maintenance and delivery of the training modules.

Targeted training will help staff to:

- improve their skills through exposure to new technologies, procedures research, etc.
- expand networking opportunities with professional peers; and
- gain recognition by sharing expertise through presentations of and participation in training activities both locally and internationally.

5.6.8 Information Management

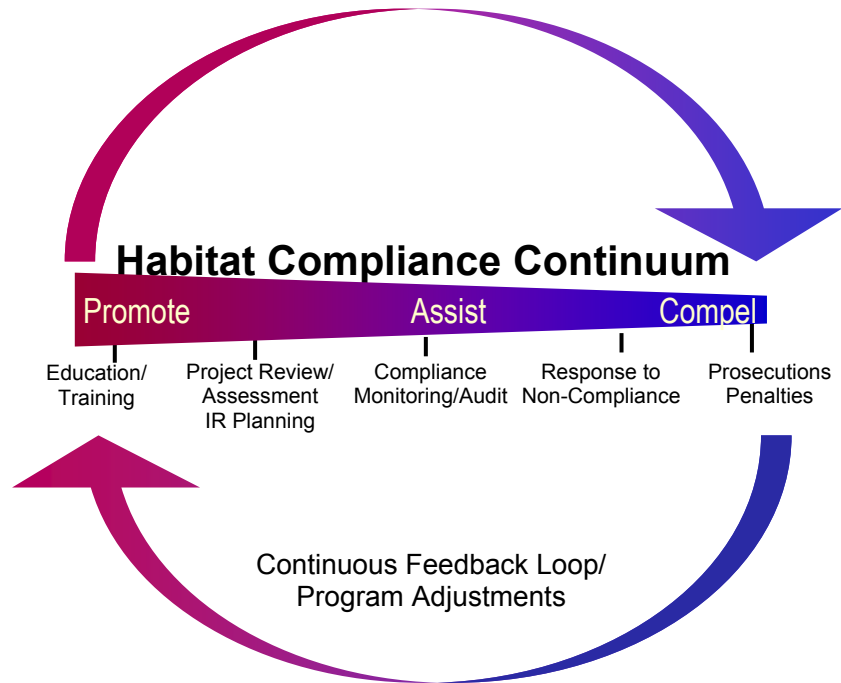
The following recommendations are made to improve information management:

- a formalized mechanism and procedures should be established for ensuring the expeditious transfer of inter-departmental information;
- a library, managed by a trained librarian be established for cataloguing, storing, loaning and managing all data, documents, etc. relevant to all of the agencies under the jurisdiction of the new Department of Environmental Planning and Protection. This library will also be responsible for making relevant information available to the public, researchers and private consultants;
- a relational database should be developed to allow individuals to query data by various attributes such as island name, time period, study type (EAs, scientific research etc.), source, subject types (coral, mangroves, national parks, etc.). Searches can also be designed to use interactive maps based on Geographic Information Systems (GIS); and
- a well defined programme, including timeline, for a phased upgrade of computer hardware and software for staff within the new Department.

5.6.9 Compliance and Enforcement

As discussed earlier, The Bahamas faces several challenges pertaining to environmental compliance and enforcement in general, and specifically, for the four thematic areas. To ensure an effective regime for environmental compliance and enforcement in the four thematic areas, a National Environmental Compliance Model that includes a continuum of tools (education/training, advice, monitoring/auditing, agreements and enforcement) to improve level of compliance should be developed and implemented.

Environmental Compliance Model



The following key elements are recommended:

- **New regulations and guidelines** as per sections 5.5.1 and 5.5.2, covering all aspects relative to the thematic areas with a clear delineation of roles and responsibilities, search and seizure powers, penalties for non-compliance, etc.
- **Incentives for employee and public participation** in enforcement, including instituting “Whistle Blower” legislation with allowances for anonymity.
- **Fines and penalties** should be severe enough to deter potential offenders. Penalties for a first conviction may include a fine not exceeding ten thousand dollars or imprisonment for a term of up to six months, or both. Fines and prison terms should increase with subsequent convictions. In cases involving businesses, liability should extend to both employees and management as was proposed in the draft Bill for *An Act to Establish The Bahamas Ministry of Environmental Planning and Protection and to Provide for Environmental Planning and Protection*.
- **A formal structure for undertaking investigations** of claims and/or charges of non-compliance.
- **Sufficient well trained and properly equipped investigative and enforcement staff** to undertake investigations. Such staff should be strategically located to allow for the most

rapid response throughout the Family Islands. The 2000 draft ICF report recommended a total of 40 staff, 14 of whom would be employed by a Laboratory Section, as part of an Environmental Monitoring and Enforcement Division of a Ministry of Environmental Planning and Protection. This staffing level is still required even with a smaller Department of Environmental Planning and Protection.

- **Adequate funding** to allow investigators to execute their responsibilities expeditiously and effectively including funding for laboratory analyses, travel, computers, vehicles, watercraft, the use of experts, as required. The annual salary for the 40 staff is likely to be in the range of \$977,000 as per the 2000 ICF report. The cost for equipment, travel, supplies, etc. will be additional.
- **Fairness** in the application of the regulations.
- **On-going training** for investigative and enforcement staff in evidentiary matters, including latest techniques in collecting and handling evidence, and presenting evidence in court.

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APPENDIX A

REVISED NEP

**DRAFT
NATIONAL ENVIRONMENTAL POLICY
FOR THE
COMMONWEALTH OF THE BAHAMAS**

Prepared for:

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April 2005

Printed on Recycled Paper Containing Post-Consumer Fibre



INTRODUCTION

The Bahamas comprises an archipelago of over 700 low-lying islands plus more than 200 cays, islets and rocks, covering approximately 100,000 mi² (260, 000 km²) mostly comprised of the country's Exclusive Economic Zone (EEZ) in the Atlantic Ocean. The total land area is small, approximately 5,380 mi² (13, 934 km²), and only a very small number, approximately 30, of the islands are inhabited. Coastal areas, holding the vast majority of the population and economic activity, are vital to the prosperity of these islands.

The archipelagic nature of The Bahamas creates a unique natural environment. However, The Bahamas natural resources are limited and its size, complexity and ecological isolation have important implications for biodiversity, and human development. With some 80% of The Bahamas landmass within 5 ft (1.5 m) of mean sea level, its fragile coastal ecosystems are extremely vulnerable to the effects of global climate change and sea level rise. In addition, water pollution, land degradation, destruction of wetlands and introduction of invasive species are all issues of growing concern for The Bahamas. Addressing these environmental issues together with growing developmental pressures on the limited land base, declining populations on several of the inhabited islands and the need for a more diversified economy, requires a comprehensive integrated long-term planning and management strategy that is consistent with the goal of sustainable development.

The Government of the Commonwealth of The Bahamas (GOB) recognizes that a healthy and safe environment - reflected in biological diversity and functioning ecosystems, clean water, clean air and productive soils - is essential to the economic and social well-being and health of its citizens and that its citizens influence and are influenced by their environment. It also recognizes that its citizens must live in an environment of a quality that permits a life of dignity and allows the attainment of the highest possible level of health and well-being; and that this can only be achieved if economic and social development is in harmony with ecological principles.

Chapter V of The Bahamas 1973 Constitution grants the Parliament of The Bahamas the authority to make laws and policies with a view to maintaining a safe, productive and healthy environment that will enhance the health and well-being of its citizens and sustain a high quality of life.

Vision

The Government envisions a Bahamas in which all people and institutions treasure its unique natural environment and voluntarily choose to act in a manner that contributes to its conservation, protection and enhancement. We foresee a time when all our people, rich and

poor, young and old, show respect and appreciation for their natural environment, and share in the benefits that maintenance of a healthy, safe and productive environment provides to present and future generations.

Policy Goal and Objectives

The Government of The Bahamas recognizes the fundamental rights of its people to a healthy and safe environment that is essential to sustaining the quality of life to which all its citizens are entitled. The GOB is committed to the sustainable use of the environment and consequently the promotion of economic and social development that fully integrates the environment in a manner consistent with the goal of sustainable development. However, the fundamental rights of the people are accompanied by certain responsibilities –a solemn duty of all who reside in The Bahamas to share in the stewardship of its unique natural environment and resources so that these are sustained and available for the benefits of future generations.

The goal of the GOB is the sustainable use of the environment of The Bahamas to meet the needs of present and future generations.

Government's approach to attaining this goal is to pursue a strategy of sustainable development, meaning improving the quality of human life while living within the carrying capacity of supporting ecosystems. Its specific objectives are to:

- prevent, reduce or eliminate various forms of pollution to ensure adequate protection of the environment and the health of its citizens;
- conserve the biological diversity of the country and the stability, integrity, resilience and productivity of ecosystems; and
- provide for environment to be fully integrated in policies, plans, programs and development project decisions that might be detrimental to the continued health, safety and productivity of the country's environment.

BASIC PRINCIPLES

The Government of The Bahamas' environmental policy will be guided by the following basic principles:

Respect and Care for the Community of Life

An ethic based on respect and care for each other and for nature is the foundation of sustainable development. Development ought not to be at the expense of other groups or future generations, nor significantly threaten the survival of other species. The benefits and costs of resource use

and environmental protection, conservation and enhancement should be shared fairly among different communities, among men, women and children, among people who are poor and those who are affluent and between our generation and those who will come after us.

All life, with soil, water and air, constitutes a great, interdependent system - the ecosystem. Disturbing one component can affect the whole. Our survival depends on the use of other species, but it is a matter of ethics, as well as practicality, that we act as stewards to ensure their survival and safeguard their habitats. Implementation of this principle requires that:

- all sector of society (industry, citizens' groups, non-governmental organizations) incorporate the ethic of stewardship and sustainability into their own policies and practices; and
- people in all walks of life incorporate the ethic of stewardship and sustainability into their personal behaviour and conduct.

Improve the Quality of Human Life

The aim of development is to improve the quality of human life. It should enable people to realize their potential and lead lives of dignity and fulfillment. Economic growth is an essential part of development, but it cannot be a goal in itself.

Development should result in long and healthy human lives, improved education, access to decent housing, adequate nutrition and safe water, political freedom, guaranteed human rights, cultural and religious freedoms, and freedom from violence. Development is only real if it makes our lives better in all these respects.

Conserve the Diversity, Integrity and Productivity of Natural Resources

Development must strive to:

- a) Conserve life-support systems, i.e. the ecological systems that cleanse air and water, regulate water flow, recycle essential elements, create and regenerate soil and enable ecosystems to renew themselves.
- b) Conserve Biodiversity. This includes not only species of plants, animals and other organisms but also the range of genetic stocks within each species, and the variety of different ecosystems, including those in protected areas. This may also include national parks and conservation areas.
- c) Use renewable resources sustainably. These resources include soil, wild and domesticated organisms, forests, agricultural land, and the marine and freshwater ecosystems.

- d) Conserve non-renewable resources. The use of these resources will be optimized to obtain the best possible benefit for all citizens and without impairing the value of other resources.
- e) Utilize alternative technologies. The use of alternative, less harmful technologies for exploiting natural resources.

Keep within the Country's Carrying Capacity

There are finite limits to the carrying capacity of The Bahamas' ecosystems so its renewable resources must be used sustainably. This must be linked to a humane, proactive population policy, which seeks to stabilize the population. We must also recognize the special role of Bahamian youth and that the need for their empowerment is integral to success in attaining sustainable development. In order to keep growth within the nation's carrying capacity, the following are required:

- National physical development and planning policies must address in a realistic way the need to stabilize population growth, reduce poverty, promote equal access to all national services and engender sustainable tourism. An ecological approach to human settlements planning must be implemented in order to make our settlements, towns and cities clean and safe. Strategies and plans must also be introduced to use land and water optimally.
- Resource conservation, waste minimization and recycling must be promoted as a way of life. Economic incentives, environmental taxes and use of environmentally-preferred products and services must become an accepted part of our environmental management strategy.
- Family planning services must be strengthened and linked to improved care and education for mothers and children.

Change Personal Attitudes and Practices

If the ethic for sustainable development is to be widely adopted, people must re-examine their values and alter their behaviour. Information must be widely disseminated through formal and informal education campaigns so that stewardship of the environment and the required actions are widely understood.

Environmental education for children and adults must be integrated in education at all levels. Extension services must also be available to help farmers, fishermen, contractors/builders, artisans, the urban and rural populations and other groups to use natural resources more productively and sustainably.

Empower Communities to care for their own Environments

Local communities, non-governmental organizations and community-based organizations provide the easiest channels for people to express their concerns and take action to create sustainable societies. However, such groups need the power to act. Communities should be given an opportunity to share in managing their local resources and the right to participate in decisions. Local government bodies, communities, businesses, non-governmental and community-based organizations and other interest groups should become partners with the Government of The Bahamas and its agents in decisions about policies, plans, programs and projects that affect them, their environment, and the resources on which they depend.

A national forum for Government, business and the environmental movement to have ongoing dialogue in achieving environmental sustainability will help build confidence by discussion of objectives, processes and practices and the open disclosure of the results of monitoring. It will be adaptive, continually re-directing its course in response to experience and to new needs.

APPENDIX B

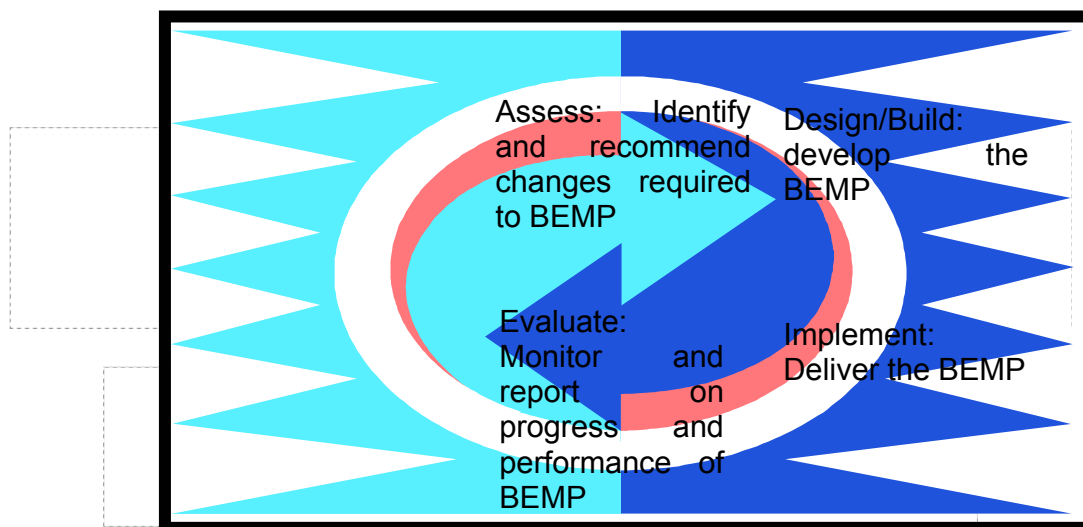
REVISED BLUEPRINT

PROPOSED BLUEPRINT FOR THE BAHAMAS' ENVIRONMENTAL MANAGEMENT PROGRAM

1.0 BACKGROUND

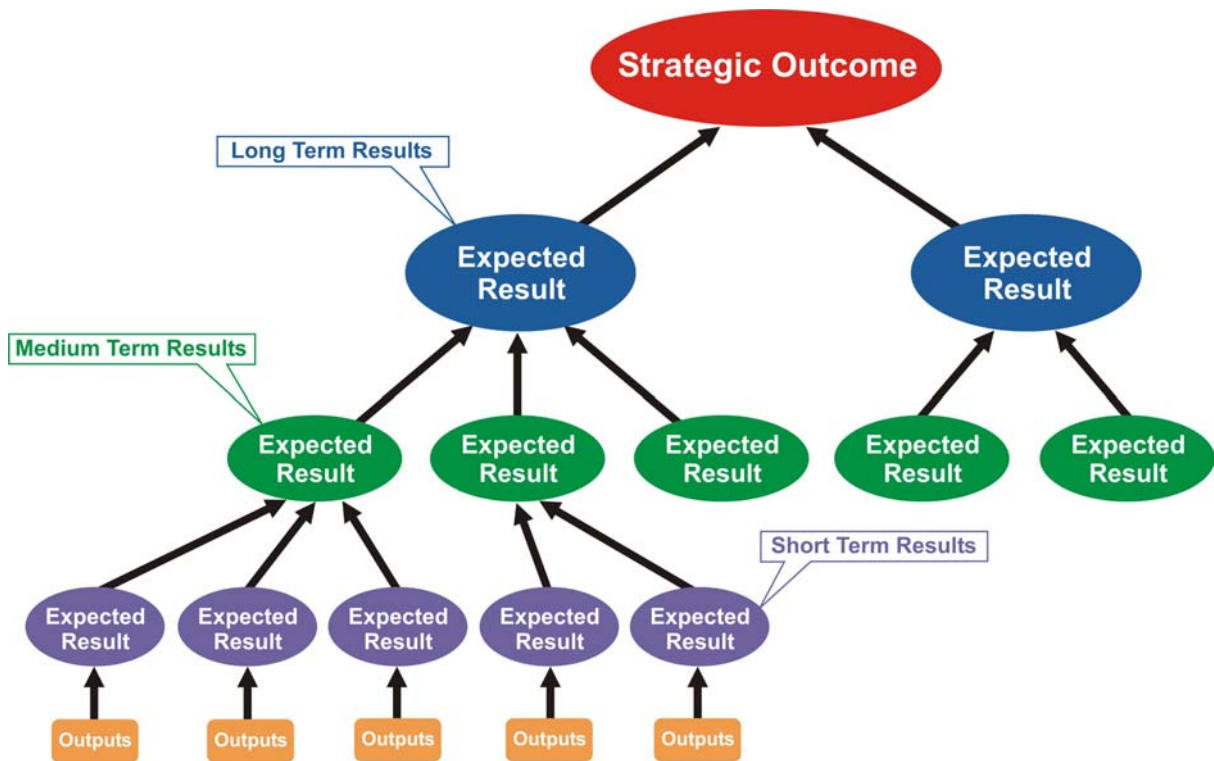
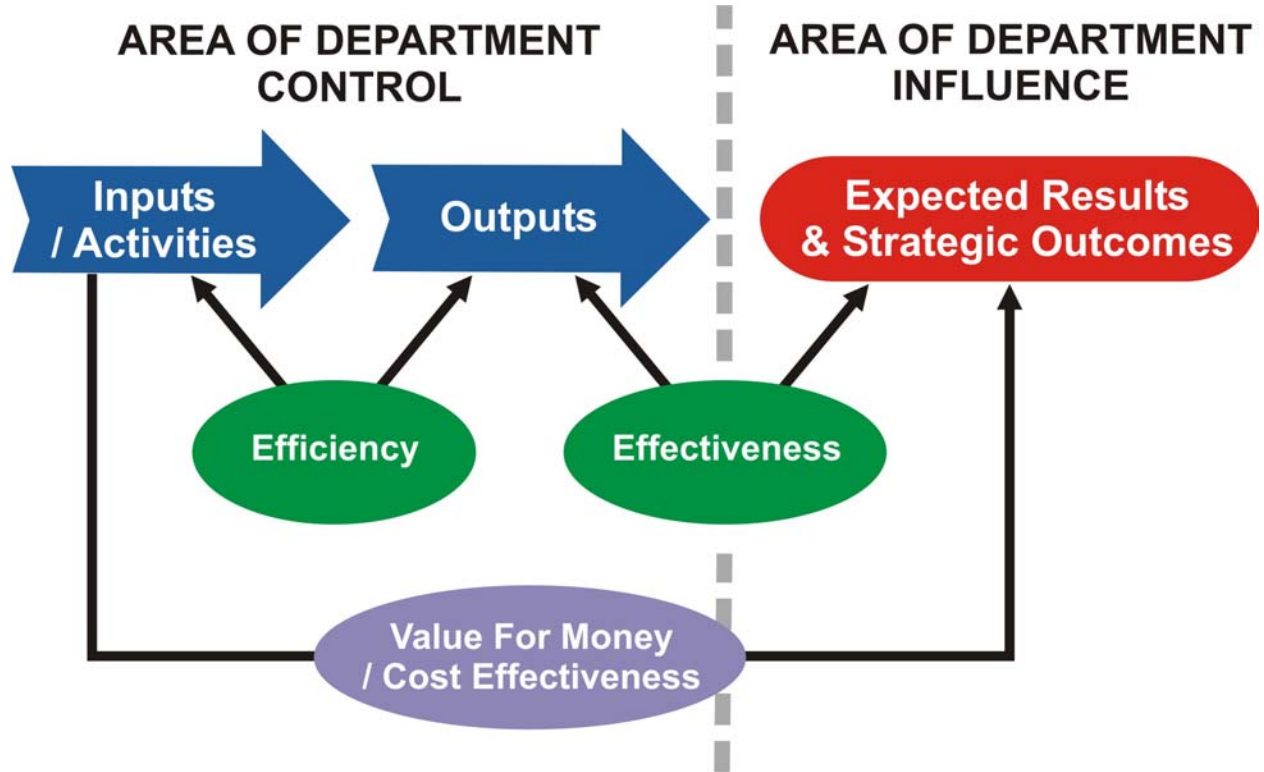
The proposed Blueprint for The Bahamas Environmental Management Program (BEMP) is intended to provide a map to plan, monitor, evaluate and report on the results throughout its lifecycle (design/build/develop, implement, evaluate and assess) as shown in the figure below. The Blueprint includes three core components: (i) Program Profile; (ii) Expected Results; and (iii) Monitoring and Evaluation.

Life Cycle Approach



The Program Profile provides a description of the program's origin, beneficiaries and regulated parties, delivery approaches and strategies, resources, governance structure and planned results

The Expected Results component represents the focal point of the Blueprint providing a graphic representation of the causal or logical relationships (i.e. Logic Model) between activities and the outputs and results that the BEMP is intended to produce as shown below. A good logic model validates the theory behind the BEMP and represents the first step in developing realistic and relevant performance measurement and evaluation plans.



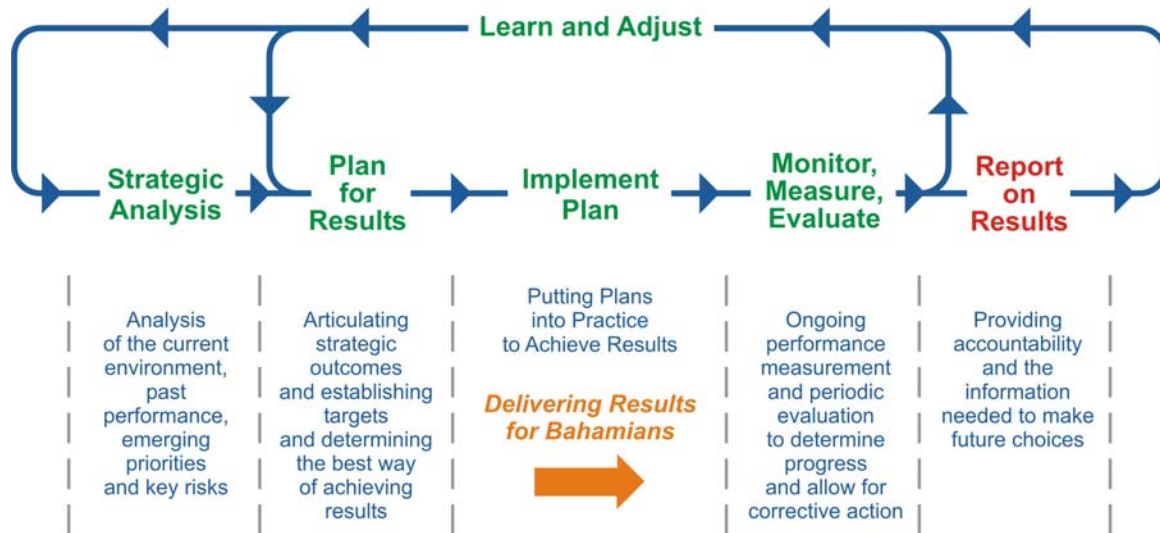
The monitoring and evaluation plan represents the government’s strategy to monitor performance and demonstrate results of the BEMP. The monitoring or performance measurement plan enables managers to establish the necessary systems and processes to collect and analyze data and information so that the BEMP’s performance can be optimized. Evaluations generate accurate, objective and evidence-based information to help government managers to make sound management decisions, demonstrate success, show ongoing relevance and develop more effective and cost-efficient alternatives to service delivery that provide ongoing benefits to Bahamians.

The following presents the logic model (activities; outputs; and results (immediate, intermediate and ultimate or final) for the BEMP; and a table of draft performance indicators to monitor and evaluate the BEMP’s performance in achieving its desired results and contributing to the strategic outcomes outlined in the National Environmental Policy (NEP).

2.0 LOGIC MODEL FOR BEMP

2.1 ACTIVITIES OF THE BEMP

The following proposes key activities of the BEMP where resources should be expended to produce outputs (products and services) that contribute to immediate, intermediate and ultimate results.



2.1.1 Establishing the “Rules of the Game”: Developing the regulatory (regulations) and policy (operational policies, guides, guidelines, codes of practice) basis for environmental management in The Bahamas.

- 2.1.2 Communicating the rules of the game: Communicating information about the rules of the game (educational and training materials) to raise awareness and understanding and to build capacity about the environmental management in the Bahamas.
- 2.1.3 Conducting Regulatory Reviews: Conducting reviews of existing and proposed development projects to assess their impacts on the environment and establish mitigation and compensation measures to reduce, eliminate and offset their adverse effects in accordance with the rules of the game.
- 2.1.4 Compliance and Effectiveness Monitoring and Auditing: Conducting monitoring of existing activities, projects and plans to establish compliance with and effectiveness of regulations, policies and guidelines.
- 2.1.5 Responding to cases of non-compliance: Establishing cases of non-compliance with the rules of the game and taking appropriate actions to enforce the requirements.
- 2.1.6 Conducting scientific studies to establish baseline environmental conditions and improve understanding of the environment and impacts of human activities on its productivity.
- 2.1.7 Reporting on the state of the environment, emerging issues and government priorities.
- 2.1.8 Evaluating the results achieved by the BEMP and developing and implementing strategies and plans to continuously improve its performance.

2.2 OUTPUTS OF THE BEMP

The outputs resulting from the activities of the BEMP in the form of products and services are identified below.

- 2.2.1 Developing regulatory and policy tools for environmental management:
 - (i) Regulations;
 - (ii) National and Operating Policies;
 - (iii) Guides;
 - (iv) Guidelines, Codes of Practice.
- 2.2.2 Communicating information, educational and training materials for all **SECTORS TO** raise awareness and understanding about environmental management:
 - (i) Fact sheets, brochures, slide presentations, training modules,

- (ii) Publications;
 - (iii) Workshops, conferences, seminars
 - (iv) Training courses;
 - (v) Web sites and other forms of mass media.
- 2.2.3 Conducting reviews of existing and proposed development projects to assess their impacts on the environment and establish mitigation and compensation measures to reduce, eliminate and offset their adverse effects
- (i) Reviews of Environmental Impact Assessment Reports (i.e. EIS);
 - (ii) Public consultation meetings;
 - (iii) Follow-up studies;
 - (iv) Environmental Management/Protection Plans.
- 2.2.4 Monitoring and auditing existing activities, projects and plans to establish compliance with environmental requirements and the effectiveness of mitigation and compensation measures:
- (i) Site inspections and audits;
 - (ii) Monitoring and auditing reports.
- 2.2.5 Responding to cases of non-compliance:
- (i) Warnings;
 - (ii) Stop Orders;
 - (iii) Investigations;
 - (iv) Charges;
 - (v) Convictions and orders for remedial measures.
- 2.2.6 Conducting scientific studies to establish environmental quality and improve understanding of the environment and impacts of human activities on its productivity and to guide decision-making:
- (i) Research studies;
 - (ii) Baseline Monitoring studies.
- 2.2.7 Reporting on the state of the environment and emerging issues and priorities:
- (i) Reports on the State of the Environment

2.2.8 Evaluating and reporting on the results achieved by the BEMP and developing and implementing strategies and plans to continuously improve its performance.

- (i) Evaluation reports;
- (ii) Process modernization plans and initiatives.

2.3 RESULTS

The results achieved through the activities of the BEMP are described in three time frames:

- (i) immediate (short-term, i.e. 1-3 years);
- (ii) intermediate (medium-term, i.e. 3-5 years);
- (iii) final (long-term, i.e. beyond 5 years). These results are intended to contribute to Strategic Outcome outlined in The Bahamas National Environmental Policy.

2.3.1 Immediate Results of BEMP

2.3.1.1 Developing regulatory and policy base for environmental management:

- (i) Standards for environmental management established.

2.3.1.2 Communicating information, educational and training materials to raise awareness and understanding about environmental management:

- (i) A public and partners that are aware of the environment, understand the requirements to comply with the environmental laws and policies and support the conservation, protection and enhancement of the environment;
- (ii) Government staff that understand environmental management laws, policies, strategies and tools, inclusive of enforcement agencies;
- (iii) Executive and legislative branches that understand environmental laws, policies, strategies and tools.

2.3.1.3 Conducting reviews of existing and proposed development projects to assess their impacts on the environment and establish mitigation and compensation measures to reduce, eliminate and offset their adverse effects:

- (i) Environmental requirements are integrated in the design of new development proposals and existing developments.

2.3.1.4 Monitoring and auditing existing activities, projects and plans to establish compliance with environmental requirements and the effectiveness of mitigation and compensation measures:

- (i) Compliance with and effectiveness of mitigation and compensation measures are confirmed.

2.3.1.5 Responding to cases of non-compliance:

- (i) Non-compliance is dealt with.

2.3.1.6 Conducting scientific studies to establish environmental quality and improve understanding of the environment and impacts of human activities on its productivity:

- (i) Environmental quality is established and environmental knowledge is improved.

2.3.1.7 Reporting on the state of the environment, emerging issues and government priorities:

- (i) The public is aware of the state of the environment and emerging issues and priorities.

2.3.1.8 Evaluating the results achieved by the BEMP and developing and implementing strategies and plans to continuously improve its performance.

- (i) Environmental processes are improved.

2.4 INTERMEDIATE RESULTS OF BEMP

- (i) Environmental impacts of activities, projects and plans are eliminated or reduced; and
- (ii) Losses to environmental assets are offset.

2.5 Ultimate Results of BEMP

- (i) Healthy and productive ecosystems that sustain social and economic benefits for existing and future generations.

3.0 PERFORMANCE INDICATORS FOR BEMP

Performance indicators represent a particular value or characteristic (quantitative or qualitative) designed to measure input, output (services and products), result, etc. of the Program's activities. The indicators should measure all important aspects of outputs/results and should allow for assessing progress in the short and/or long term. They should be easily read and understood; and

they must be valid, reliable over time. For example these should not be “quality of life of X” but “% of X deemed to have a ‘good’ quality life”.

In developing performance indicators consideration should be given to how they are going to be reported. This should include:

- (i) **Data Source:** The source from which the data for performance indicator will be available on a regular basis.
- (ii) **Frequency:** The frequency with which the data for performance indicators will be available e.g. annually.
- (iii) **Actual:** This refers to the last performance indicators data that is available e.g. 50% of Bahamians own their home.
- (iv) **Effective date for Actual:** The date at which the last actual data was collected.
- (v) **Target:** refers to any targets (performance levels) that have been set for outcomes and outputs. Performance information tends to be more robust if actual performance can be compared to targets that have been set earlier in the process. It should be based on some objective or systematic approach, such as benchmarks, studies, analyses of historical data and resources, etc.
- (vi) **Benchmark:** Performance levels achieved by any other organization or jurisdiction that allows a department or ministry to compare its own achievements. Usually considered as best practices.
- (vii) **Date to Achieve Target:** The date that has been set for the achievement of a target (performance level).

The following is an example of a table of potential performance indicators:

Indicators	Sources of Data	Collection Method	Frequency	Responsibility
% of Environmental Impact Assessments (EIAs) completed for development projects	EIA tracking system	Data entry	Ongoing	Government agency
% of EIAs subjected to public review	EIA tracking system	Data entry	Ongoing	Government agency
% of companies with voluntary environmental programmes	Companies	survey	annually	companies
% of government staff that completed mandatory training programme	Government agencies	survey	annually	Government agencies
% of public that are aware of environmental laws and regulations and policies and guidelines	Government agencies	survey	annually	Government agencies