

**Caribbean Planning for adaptation
to Global Climate Change (CPACC)**

**An Assessment of the Adequacy
of the Legal Framework to Cope**

with the

**Potential Effects of Sea Level Rise
in Barbados**

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1.0 INTRODUCTION

The Caribbean Planning for Adaptation to global Climate Change (CPACC) is a regional project involving twelve participating Caribbean states. The project is funded by the Global Environment Facility (GEF) and is executed by the Organisation of American States (OAS). The primary objective of the CPACC Project is to support Caribbean countries in preparing to cope with the potential effects of global climate change.

The project is aimed at assisting national governments to:

- (i) strengthen regional capacity for monitoring and analysing climate and sea level dynamics and trends, seeking to determine the immediate and potential impacts of global climate change;
- (ii) identify areas particularly vulnerable to the adverse effects of climate change and sea level rise (SLR);
- (iii) develop an integrated management and planning framework for cost effective response and adaptation to the impacts of global climate change and coastal marine areas,
- (iv) enhance regional and national capabilities for preparing for the advent of global climate change through institutional strengthening and human resource development; and
- (v) identify and assist in the development of policy options that may help in the implementation of a long-term program of adaptation to global climate change in vulnerable coastal areas.

The CPACC project commenced in 1998 and has a duration of four years. It consists of a series of four regional and national components distributed among the participating countries. Component six relates to Coastal Vulnerability and Risk Assessment. Three countries (Barbados, Grenada and Guyana) have agreed to participate under this component in development of vulnerability and risk assessments of these coastal areas. This component is required to review coastal vulnerability assessment models and the adaptation of the Intergovernmental Panel on Climate Change (IPCC) common methodology in these three countries.

This report has been prepared under component six in relation to Barbados and constitutes a review and analysis of all existing environmental, land use and building legislation. It assesses the adequacy of the legislation to cope with the potential effects of sea level rise in Barbados. Specifically, the scope of this report is to:

- (i) identify and describe all existing environmental, land use and building legislation and regulations in Barbados;
- (ii) assess the current legislation, noting those regulations which are applicable to coastal regions, and the effectiveness and adequacy of the legislation in Barbados;
- (iii) assess the adequacy of the current legislation and legislation to cope with sea level rise under each of the scenarios which have been suggested for Barbados; and
- (iv) propose revisions to the current legislation or new legislation aimed at minimising or eliminating the adverse impact of sea level rise noting the output of (3) above for Barbados.

Before the specific objectives of this report are addressed it is necessary to consider the potential use on Barbados.

1.1 Potential Effects of Sea Level Rise

The overarching objective of the CPACC project is to assist the participating countries in preparing to cope with the effects of global climate change. In essence CPACC is intended to help the Caribbean countries adapt to these potential effects. Adaptation is concerned with responses to both the adverse and positive effects of climate change. It refers to any adjustments - whether positive, reactive, or anticipatory - that can respond to anticipated or actual consequences associated with climate change. It thus implicitly recognises that future climate change will occur and must be accommodated in policy (IPCC 1996:831)

While it is not currently possible to provide an exhaustive or authoritative summary of projected impacts on Caribbean states, scientific evidence suggests that there are two main categories of likely impact from global climate change, namely:

- (i) changing patterns of weather events: these include changes or increase in the frequency, magnitude, duration and severity of extreme weather events (storms, rainfall, droughts, heat waves, hurricanes, etc); and

- (ii) sea level rise: this phenomenon will likely inundate and displace wetlands and lowlands, erode shorelines, exacerbate coastal storm flooding, increase the salinity of estuaries and impair water quality, alter tidal ranges, alter sediment disposition patterns and decrease the amount of light in sensitive marine and aquatic environments (de Romilly 2000:80).

This report only considers the impacts associated with sea level rise (SLR) in Barbados. It is currently projected that a medium sea level rise of 5mm per year is expected to affect Barbados notwithstanding anticipated mean rates of tectonic uplift. With 1992 as a base year, sea level is expected to rise by 40mm by 2000, 165mm by 2025 and 290mm by 2050 (Chakalal et al 2000:).

Sea level rise will not only impact upon the natural environment/resources in Barbados but will also affect socio-economic activities. The greatest zone of impact will be the coastal strip of Barbados. The PDP shows the existence of urban corridor of development along the west and south coasts of Barbados. In this corridor most of the urban land use activities (residential, tourism, commercial, industrial, recreational, agricultural) are concentrated within or proximate to the 2km zone landward of the coastline.

The impacts associated with sea level rise in Barbados may be divided into two groups:

- (a) direct impacts (natural environmental / economic impacts) and (b) indirect impacts (socio-economic impacts).

1.2 Direct Impacts

Coastal Erosion

It is anticipated that sea level rise will cause significant beach and coastal erosion in Barbados. Some of the factors which will influence the rate of coastal erosion by SLR include geologic structure, composition, morphology, slope, nearshore bathymetry, wave characteristics and age. In addition coastal erosion may also be exacerbated by the action of man through sandmining, removal of near shore vegetation and the unlawful erection of coastal structures. Many of the beaches in Barbados may be classified as narrow (ranging between 12 - 15m wide) and of gentle slopes of less than 10 degrees. These features will assist in increasing the rate of beach erosion and coastal land loss.

Flooding

Evidence suggests that as result of expected sea level rise the number of people flooded by storm surge in any typical year will be more that five times higher by the 2080's. Consequently, many coastal areas are likely to experience annual or more frequent flooding, with the islands of the Caribbean, Indian Ocean and the Pacific Ocean facing the largest relative increase in flood risk (III Assessment Report).

Barbados has a coastline of 97km which may be divided into various geomorphological zones. Generally the sheltered northwest, west and southwest coasts consist of low lying, sandy areas which are more susceptible the effects of sea level rise such as flooding, The exposed eastern and south eastern coasts consist of limestone cliffs with bay head beaches and associated headlands. These areas characterised by cliffs tend to be more resistant to the impacts of sea level rise.

A 1994 study (Delcan International 1994) suggests that extensive flooding will affect most of the south coast of the island including areas up to and beyond the main coastal highway. These predictions are based on a 1 in 50 and 1 in 100 year return storm event. They include water level considerations caused by sea level rise, tide, beach coast elevation, wave setup, runup / surfbeat, inverse barometric rise, and suggested fireboard.

The anticipated flood zones include:

- Graeme Hall area - flooded extensively for approximately 1 km inland.
- Bridgetown area Carlisle Bay - flood zone of approximately 150m.
- West coast including Barbados, Southern Hometown, Speightstown and Heywood - flood areas of approximately 300m.
- Other west coast areas including Fitts Village, Paynes Bay, Godings and Mullins - flood zones of approximately 150m.

Salinization

Barbados has been classified as a water scarce country. All freshwater supply is obtained from underground aquifers, several of which are located within the coastal zone. The prospect of saline intrusion of the freshwater lens is of real concern for Barbados. Barbados already suffers from the problem of salinization caused by over pumping of the freshwater. It is suggested that sea level rise will compound this problem and could lead to increase salinity in both the coastal aquifers and inland aquifers.

Mangrove Forest : There are pockets of mangrove in small coastal swamps in Barbados. It is felt that sea level rise could have an adverse effect on mangrove which play an important role as a filter and nursery for fish.

1.3 Indirect Impacts

It is acknowledged that the effects associated with sea level rise will also have indirect impacts on the socio-economic sectors of small island states like Barbados. In particular, at present approximately 25% of the island's population reside within a 2 km urban corridor along the west and south coasts. When the population of urban Bridgetown is included, the 1988 PDP estimates that more than 62% of the total population lived in the coastal belt. In addition to the residential use of the coastal belt there is also a number of other land uses such as tourism, commercial, agricultural, recreational and industrial uses. These land uses all compete for a limited amount space which also contains infrastructural developments such as roads, utilities, ports, etc.

The indirect effect of SLR will affect tourism development, settlements, agriculture, the water supply, fisheries, financial services and the health sector.

Tourism

The tourism product in Barbados is heavily dependent on the coastal and marine resources. As a result almost all of the existing tourism establishments are located within the coastal belt. In this regard therefore, it is suggested that the coastal erosion and beach loss caused by SLR will impair the value of these natural and environmental resources. These impacts will therefore have an adverse effect on the tourist product.

Furthermore, it has been established that the significant majority of the tourism plant fall within the 1 in 50 and 1 in 100 year storm inundation zones. This exposes the tourist establishments to major damage caused by flooding. This will ultimately lead to revenue loss.

Human Settlement

All the major urban centres (Speightstown, Holetown, Bridgetown, Oistins Town) fall within the coastal belt. SLR induced impacts such as flooding and erosion are predicted to negatively impact upon the various land uses (commercial, industrial, recreational, etc) sited within the urban centres. Flooding is expected to have a significant impact in particular on the residential and commercial land uses since a significant amount residential and commercial land uses since a significant amount residences and businesses are sited within the 1 in 50 and 1 in 100 year flood zones

Agriculture

The SLR induced impacts will not affect the agricultural sector in a significant way because most of the agricultural lands fall outside the urban residential corridor. However, those pockets of agricultural areas found within the coastal belt will be adversely affected by salinization, flooding and erosion. Salinization will also affect the quality of the water used for irrigation purposes and this could ultimately affect the security of locally produced food.

Water Supply

In addition to the direct impacts that SLR is predicted to have on the quality of the ground water resources it is also anticipated that there will be indirect impacts on the water supply. For example disruptions of the water supply may occur where water mains are located within areas affected by coastal erosion. Similarly, it is expected that SLR induced coastal erosion will affect sewerage mains.

Financial Services

One possible indirect impact associated with SLR is the increase in insurance premiums. The cost of erecting coastal defence works and other engineering infrastructure is also likely to increase.

Human Health

There is likely to be increased health threats caused by flooding, burst water and sewerage mains. The associated impacts may include increased incidences of vector-borne and water-borne diseases such as malaria and dengue.

2.0 SECTION 1 - Identification and Description of the Laws

Specific Objective: *To identify and describe all existing environmental, land use and building legislation and regulation in Barbados.*

This section identifies and describes the existing environmental, building and land use legislation in Barbados. The legislation is classified by the use of the following codes: environmental (E), building (B), and land use (L). The following Table (Figure 1.0) lists the primary legislation only but this section will also identify relevant pieces of subsidiary legislation as well.

FIGURE 1.0

LIST OF ENVIRONMENTAL, BUILDING AND LAND USE PRIMARY LEGISLATION IN BARBADOS

TITLE OF ACT	CHAPTER NO.	DATE OF ENACTMENT	DATE OF AMENDMENTS
Barbados Port Authority Act	285B	1975	1978/33;1978/43;1981/22;1982/55;1987/37;1987/40;1990/44;1998/39.
Barbados Territorial Waters Act	386	1977	1978/3
Barbados Water Authority Act	274A	1980	1982/26; 1987/18; 1988/22
Caribbean Disaster Emergency Response Act		1998	
Caribee Hotels Ltd. (Sea Defence) Act		1959	
Chattel Buildings Security Act	224	1913	1954/64
Coastal Zone Management Act		1998/39	
Condominium Act	224A	1971	1979/7;1982/54;1988/72
Crown Lands (Vesting and Disposal) Act	225	1836	1845/1;1862/2;1890/2;1894/4;1942/3;1956/38;1964/12;1965/59;1977/31; 1980/37;1983/14
Cultivation of Trees Act	390	1951	1957/55;1958/55
Emergency Powers Act	161	1939	1955/24
Environmental Levy Act		1996/8	1997/120 (by implication)
Fisheries Act		1993	1998/39 (by implication)
Health Services Act	44	1969	1969/45;1972/10;1972/23;1973/30;1974/52;1975/49;1978/2;1983/46;1984/6;1985/2;1985/20;1992/19;1995/4;1998/44;1999/18
Hotel Aids Act	72	1967	1981/18;1983/43
Housing Act	226	1973	
Land Acquisition Act	228	1948	1994/23

TITLE OF ACT	CHAPTER NO.	DATE OF ENACTMENT	DATE OF AMENDMENTS
Land Development Duty Act	228B	1962	1963/5;1965/42;1969/20;1979/14; 1981/18;1984/24;1988/12
Marine Boundaries and Jurisdiction Act	387	1978	1993/6
Marine Pollution Control Act		1998/40	
National Conservation Commission Act	392	1982	1990/33;1996/23
National Housing Corporation (Vesting of Property) Act	233B	1976	
Pesticides Control Act	395	1973	1982/30
Petroleum(Winning Operations) Act	381	1950	1953/25; 1956/56; 1957/30; 1968/3; 1981/18; 1982/17 &41
Port St. Charles Development Act		1996/18	
Prevention of Floods Act	235	1951	1952/65;1958/55;1978/13;1996/13; 1996/12
Quarries Act	353	1963	1972/5;1985/22
Rural Development Commission Act		1995/12	
Sanitation Service Authority Act	382	1974	1975/7; 1996/23
Shipping (Oil Pollution) Act	296A	1994	
Special Development Areas Act	296	1996	
Storage of Petroleum Act	172	1882	1942/1; 1947/27; 1948/28; 1952/39; 1963/18; 1965/12; 1968/43; 1969/12; 1970/20; 1974/28; 1974/42; 1977/39; 1978/24; 1979/29; 1980/36; 1982/18
Town and Country Planning Act	240	1968	
Trees (Preservation) Act	397	1981	
Underground Water Control Act	283	1953	1959/36; 1973/50
Urban Development Commission Act		1997/10	
Wild Birds Protection Act	398	1907	1952/7; 1958/55; 1978/27

1. Barbados Port Authority Act (L)
Cap. 285B

This Act provides for the establishment of a Port Authority in Barbados.

- Establishes the Port Authority, contains financial provisions and provisions dealing with the responsibility of the Authority as a warehouseman, the vesting of certain property, the rights and liabilities of the Authority as well as general legal and miscellaneous provisions.
- The Act repeals the *Barbados Harbours Act*, formerly Cap. 286. However, section 68(2) provides that the *Barbados Harbours Regulations, 1961* and the *Harbour Areas (Traffic) Regulations, 1963* "shall continue in force until revoked under this Act and shall be so construed as to give effect to the provisions of this Act".

The functions of the Authority as set out in Section 4 are:

- to provide, maintain, operate and improve such lighthouses, port and harbour services and facilities in Barbados as the Minister considers necessary or desirable;
- to take such action as the Authority considers necessary or desirable in relation to the exercise of any of its functions mentioned in paragraph (a);
- the collection of dues and charges authorised by the regulations;
- to develop and manage all lands leased to or vested in the Authority;
- to perform such functions as the Minister determines and to report to the Minister at such times as he requires respecting the matters to which this Act relates; and
- generally to carry out the provisions of this Act.

The Second Schedule of the Coastal Zone Management Act (Act 1998-39) amends the Barbados Port Authority Act by providing for the insertion of a Section 5A to the effect that the Authority shall, in the exercise of its functions, have regard to the coastal zone management plan referred to in the CZMA.

The following Regulations have been made under the Act:

- The Barbados Port Authority (Tariff Book of Duties and Charges) Regulations, 1987
- The Barbados Port Authority (Water Sports) Regulations, 1990
- The Barbados Port Authority (Water Sports) Order, 1990

**2. Barbados Territorial Waters Act, (E)
Cap. 386**

This Act repeals the Territorial Waters Act, 1878 of the United Kingdom Parliament in so far as it forms part of the law of Barbados and provides for the limits of the territorial waters of Barbados.

- Sets out the limits of the territorial sea.
- Section 4 provides that the baseline for measuring the territorial sea is the low-water line along the coast of Barbados. However, under section 4(2), the Minister may by order “prescribe other baselines making use of a mixture of straight lines drawn from points on the coast of Barbados and the low-water line”.
- Confers the right of innocent passage through the territorial sea to foreign ships and identifies the circumstances in which passage is deemed non-innocent.
- Contains provisions relating to the power of the police and authorised persons in relation to foreign ships engaging in non-innocent passage as well as provisions concerning immunity and international responsibility and jurisdiction.
- Section 11 empowers the Minister to make regulations relating to, inter alia, the conservation of the living resources of the sea; the preservation of the marine environment of Barbados and the prevention and control of pollution threats; the regulation of shipping and generally for regulating the use of internal waters.

There is no subsidiary legislation under this Act.

3. Barbados Water Authority Act, (E)
Cap.274A

This Act provides for the establishment of the Barbados Water Authority.

The Act sets out the Constitution and functions of the water Authority. Some of the functions of the Authority contained in section 5 are :

- to obtain and analyse information and maintain records of the total water resources of Barbados;
 - to manage ,allocate and monitor the water resources of Barbados with a view to ensuring their best development, utilisation, conservation and protection in the public interest; and
 - to keep under review the quality, reliability and availability of water supply and sewerage services and the rates to be charged for those services.
- (a) The Act authorises the Crown to acquire land under the Land Acquisition Act for any of the Authority's purposes. (s.12). It contains provisions dealing with finances, accounts and miscellaneous matters.
- (b) The Authority is empowered to make Regulations prescribing standards of quality for potable and other water supplies, sewage and industrial waste effluents and receiving streams and watercourses.

Regulations

- The Barbados Water Authority (Water Services) Regulations, 1982.
- The Barbados Water Authority (Sewerage) Regulations, 1982
- The Barbados Water Authority (In-House Installations) Regulations, 1982
- The Barbados Water Authority (Water etc. Rates) Regulations, 1982

4. Caribbean Disaster Emergency Response Act, 1998 (E)

This Act provides for the implementation by the Government of Barbados of the Agreement establishing the Caribbean Disaster Response Agency, and of certain provisions contained in the Headquarters Agreement of that Agency and for related matters.

- The provisions of this Act relate to the legal status of the Agency, the Headquarters Agreement and miscellaneous matters. The Agreement is given the force of law in Barbados.
- The objectives of the Agency, as set out in the Agreement, are
 - (a) to make an immediate and coordinated response by means of emergency disaster relief to an affected Participating State;
 - (b) to secure, coordinate and channel to interested inter-governmental and non-governmental organisations reliable and comprehensive information on disasters affecting Participating States;
 - (c) to mobilize and coordinate disaster relief from non-governmental organisations for affected Participating States;
 - (d) to mitigate or eliminate, as far as practicable, the immediate consequences of disasters in Participating States; and
 - (e) to promote the establishment, enhancement and maintenance on a sustainable basis of adequate emergency disaster response capabilities among the Members of the Agency.

There are no Regulations under this Act.

3. Caribee Hotels Ltd. (Sea Defences) Act, 1959 (E)

This Act authorises Caribee Hotels Limited to construct groynes extending for a distance of not more than two hundred feet into the sea, with or without a sea wall in order to protect and extend the beach. The Company is also authorised to repair or remove the structures.

There are no Regulations.

4. Chattel Buildings Security Act, Cap. 224 (B)

This Act would facilitate the making of loans on the security of chattel buildings.

- Provides for mortgage by deed and requires that all deeds be recorded.
- Mortgage to rank prior to all judgments
- Provision that warrant for recovery of taxes or rent to remain valid notwithstanding mortgage.

No Regulations have been made under this Act.

7. Coastal Zone Management Act (E), 1998

This Act provides for the more effective management of the coastal resources of Barbados, for the conservation and enhancement of those resources and for related matters.

- provides for the preparation of a draft coastal zone management plan comprising policies, strategies and standards that provide for the management and conservation of coastal resources.
- provides for a public enquiry to be held on presentation of draft management plan to the Minister.
- Director may designate portions of the marine areas of Barbados as restricted areas where he considers it necessary for specified purposes.
- contains specific provisions regarding coral reef protection. The Act prohibits the harvesting, importation and exportation of coral.
- prohibits the removal of vegetation, sand, stones, shingle or gravel from the foreshore.
- creates the offence of fouling the foreshore or any part of the beach by depositing offal, garbage or other waste.
- sets out powers and functions of the Director and Coastal Zone Inspectors.

- contains harsh enforcement provisions - a first time offender who is guilty of an offence other than offences under Sections 26 and 27 is liable:
 - (a) on indictment, to a fine of \$200,000 together with, where applicable, an amount equal to the value of the property seized or to imprisonment for a term of not more than 5 years; or
 - (b) on summary conviction, to a fine of \$5000 or to imprisonment for a term of not more than 2 years or to both.
 - (c) Persons obtaining second or subsequent convictions are liable:
 - on indictment, to a fine of \$400,000 together with, where applicable, an amount equal to the value of the property seized or to imprisonment for a term of not more than 5 years, or both, or
 - summary conviction, to a fine of \$10,000, or to imprisonment for a term of 2 years or to both.

8. Condominium Act, (B) **Cap 224A**

The Condominium Act facilitates the division of properties into parts that are to be owned individually and parts that are to be owned in common and provides for the use and management of such parts.

The Act only applies to property to which a valid Declaration relates (s.4). The Declaration shall consist of relevant information pertaining to the property, e.g. a statement of the interest which the person executing the Declaration has in the property; a description of the property, the location of the building in relation to the property, and a description of the units.

- Provides for a Condominium Land Register.
- Upon lodgement of the deed, the proprietors of the Unit shall be established as a body corporate with perpetual succession, a common seal and the capacity to sue and be sued.
- Sets out the functions of the body corporate.
- Provides for bye-laws.

**9. Crown Lands (Vesting and Control) Act, (L)
Cap. 225**

The Act is described in the Long Title as an Act to “vest in the Crown certain lands, to make provision for the acquisition and disposal of lands by the Crown, for the lease of certain land by the Crown and in relation to land acquired by the Admiralty for the Oceanographic Research Station, and for purposes connected therewith”.

- Part I of the Act deals with the vesting, acquisition and disposal of Crown Lands.

Section 3(1) provides for the transfer and vesting of property in the Crown and states that all “public lands, piers, wharves, bridges, works and buildings and other public property and all other property real or personal including rights which immediately before the 9th April, 1964 were vested in or held by the Governor-in-Executive Committee or the Executive Committee are hereby transferred to and vested in the Crown”.

Section 4(1) empowers the Minister to purchase, lease, take, accept or otherwise acquire any land for the use of the Crown.

Section 5 speaks to the disposal of land and states that the Minister may:

- (a) grant a licence to use any land vested in the Crown for any purpose or for such purposes as are mentioned in the licence;
- (b) grant by way of licence or letting any easement, profit or right in respect of such land; or
- (c) with the approval of Parliament sell, lease, exchange, grant, assign or surrender any such land.”

The other Parts of the Act deal with specific lands.

- (b) Part II- Constitution Swamp and Reef(Vesting)
- (c) Part III – Charles Fort (Vesting)
- (d) Part IV – Naval Property (Vesting)
- (e) Part V- Signal Stations
- (f) Part VI- War Department Lands(Vesting)
- (g) Part VI A- Reclaimed Lands (Vesting)

(h) Part VII- Lease of Certain Government Lands

(i) Part VIII- Admiralty Lands

10. Cultivation of Trees Act(E)
Cap 390

This Act promotes the cultivation of trees.

- Provides for tax contribution payments, subsidy payments and fruit tree subsidy payments as an incentive to promote the cultivation of trees.
- In order for an owner to be entitled to receive a contribution payment, the Chief Agricultural Officer must issue a certificate to the effect that:
 - (a) the trees are being grown in such numbers and at such distances from each other as he has prescribed or approved;
 - (b) the trees are being cultivated in accordance with the rules and practice of good arboriculture; and
 - (c) the area of land on which the trees are being grown is not less than half an acre.
- Subsidy payments are granted only where the Chief Agricultural Officer certifies that the trees are satisfactorily established.
- In order for an owner to receive a fruit tree subsidy, the Chief Agricultural Officer must first certify that the tree is one of the species eligible for the payment, is planted at a site and in a manner approved by him, has reached the specified age and is in a condition approved by him.

There are no regulations under this Act.

11. Emergency Powers Act
Cap 161

This Act empowers the Governor-General to declare that a state of public emergency exists in certain instances, including where he is satisfied that a public emergency has

arisen due to an imminent state of war between Barbados and another state or due to earthquake, hurricane, flood or outbreak of pestilence.

- A proclamation declaring a state of emergency shall remain in force for one month or a longer period not exceeding 6 months. As long as the proclamation remains in force Cabinet may make orders which it considers desirable in the public interest.

There are no regulations under this Act.

12. Environmental Levy Act 1996(E)

This Act provides for the imposition and collection of a levy on goods imported into Barbados and for related matters.

- Section 5 provides for that the environmental levy shall be charged, levied and collected on goods imported into Barbados.
- The Act seeks to defray the cost of the disposal of refuse generated by the use of imported goods and to defray the cost of operating and maintaining refuse disposal sites. The Act would also enhance and preserve the environment.
- An importer of goods referred to in the Schedule of the Act may be granted a refund where he satisfies the Comptroller that the imported good has been re-exported.

13. Fisheries Act (E) Cap 391

This Act provides for the management and development of fisheries in Barbados.

- Part I of the Act deals with fisheries management and development. It provides for matters such as the appointment of the Chief Fisheries Officer, Fisheries Assistants and other officers, the appointment of a Fisheries Advisory Board, fisheries management and development schemes, regional co-operation in fisheries, fisheries access agreements, licensing and registration of vessels.
- Part II sets out the provisions governing the safety of commercial fisheries vessels and accidents at sea.
- The enforcement provisions are contained in Part III which confers certain powers on authorised officers, including the power to stop, board and search

foreign vessels in Barbados waters or any local fishing vessel in or outside the waters of Barbados. Section 38 provides that the master of a fishing vessel is guilty of an offence where a person on board or employed on a fishing vessel commits an offence against the Act.

- Part IV contains miscellaneous provisions and empowers the Minister to “make regulations generally for the management and development of fisheries in the waters of Barbados” and in particular with respect to listed objectives.

The Fisheries (Management) Control Regulations, 1998

These Regulations seek to manage the manner in which fisheries is conducted, thereby protecting and conserving certain species in the marine environment.

- Regulate the method of fishing - prohibit the use of trammel or entangling nets or nets which are hung and deployed so as to catch fish primarily by entanglement;
- Offer protection to turtles by prohibiting the possession, sale or purchase of turtles and turtle eggs. The Regulations also prohibit a person from fishing or ensuring turtles, disturbing or endangering turtle nests or removing turtle eggs.
- Prohibit fishing of sea eggs in closed season, in a closed area or with the assistance of Scuba.
- Prohibit a person from landing yellow fish tuna or bigeye tuna of a specified live weight.
- A person who contravenes the Regulations is guilty of an offence and is liable on summary conviction to a fine not exceeding \$50,000 or to imprisonment for a term of two years or to both.

14. Health Services Act, (E) Cap 44

An Act relating to the promotion and preservation of health of the inhabitants of Barbados.

- Under section 3, the Minister is generally responsible for the promotion and preservation of the health of the inhabitants of Barbados. The Minister is authorised to divide the country into areas, to determine and establish health or sanitation districts in the areas and to assign such duties to officers in relation thereto as he thinks necessary.

- Provision that the Minister may construct, repair and maintain sewers.
- The Minister is given regulation making powers under section 10. It should be noted that the Regulations are subject to negative resolution. The Minister may make Regulations generally for the proper carrying out of the Act and specifically with respect to, inter alia:
 - (a) the protection, treatment, limitation and suppression of disease;
 - (b) sewers and sewage disposal works;
 - (c) the control and destruction of mosquitos, termites and other insects, rodents and other vermin
 - (d) providing for the inspection and sanitary conditions of beaches and swimming pools in the interest of the public health.
- The Minister may require the owner or occupier of premises to execute such works as the Minister considers necessary for the protection or in the interest of public health. The word premises is defined widely in the *Health Services (Amendment) Act, 1999* as meaning "land whether open or enclosed, built on or not, public or private and whether or not maintained under any enactment and includes any aircraft, ship, vessel, boat, hull, barge, tent, vehicle, shed, warehouse or any other structure designed and used for the carriage or storage of food or any other item."

The Health Services (Building) Regulations, 1969

Amendments: 1976/21; 1977/179; 1978/111

Regulation 1 requires a person who is desirous of constructing, attending or effecting any material alteration to a building to apply in writing to the Minister. The word "building" is defined as any structure used for the purposes of human habitation or in which any person is employed and includes a hospital, market or school.

Regulation 6 prohibits a person from erecting a building on any ground which is below the level of the land or street adjacent or on any land which is in a swampy condition or which is flooded or liable to become crowded unless the land has been graded and drained to the satisfaction of the Medical Officer of Health.

The Regulations also provide for drainage systems, preventing the entry of rainwater into a building through the roof and the discharging of waste.

15. Hotel Aids Act, (B)
Cap 72

This Act revises and consolidates the law relating to the encouragement of the development of hotels and for matters incidental thereto.

The Act offers income tax and other tax relief.

Regulations

- Hotel Aids Regulations 1969
- Hotel Aids (Importation of Building Materials, etc) Regulations, 1957.

16. Housing Act, (L)
Cap 226

The Housing Act seeks to consolidate and revise the law relating to housing and provides for the establishment of a National Housing Corporation (NHC). The Act also permits the NHC to invest its resources in building activities and property development other than housing to finance its housing development programmes.

- Part I of the Act deals with preliminary matters such as the definition of the terms used.
- Part II establishes the NHC and provides for its Constitution and status.
- The functions of the NHC are contained in Part III. These include acquiring , holding and managing land.
- The finances of the NHC and provisions for account keeping and audit are covered in Part IV.
- Part V of the Act provides for contracts for the sale of land by the NHC while Part VI contains transitional provisions relating to pensions.
- Various miscellaneous provisions are contained in Part VII such as the empowering of the Corporation to make Regulations.

17. Land Acquisition Act, (L)
Cap 228

This Act authorises the acquisition of land for public purposes.

- The Act empowers the Chief Surveyor to enter land to be acquired on the publication of a Notice under section 3 of the Act.
- The Governor-General may, upon publication of the Notice, authorise the Chief Surveyor to carry out any work on the land connected with the use to which the land is to be put, without waiting for the land to be formally vested.
- The Act provides for compensation to be paid for acquired land and sets out the rules for assessment.

18. Land Development Duty Act, (L)
Cap. 228B

This Act provides for the imposition of duties on the sale of land in areas where the Government undertakes or proposes to undertake substantial expenditure from public funds.

- The Act is divided into six parts. Part 1 deals with Preliminary matters. Part II provides for the imposition of duty, ascertainment of capital gains, deduction of development duty on the payment of income tax, inter alia. Part III, dealing with betterment changes, has been repealed by Act 1979-14. Part IV sets out the procedure with respect to appeals. Part V deals with general matters and the Regulation making power is set out in Part VI.

19. Marine Boundaries and Jurisdiction Act (E)

This Act provides for the establishment of Marine Boundaries and Jurisdiction.

- Section 3 establishes the Exclusion Economic Zone (EEZ), a zone contiguous to the territorial waters, with its inner limit being the boundary line of the seaward limit of the territorial waters. The outer limit is a boundary line which, subject to S3(3), is at every point a distance of 200 miles from the nearest point of the baselines of the territorial waters or such other distance from the nearest point as may be prescribed by the Minister responsible for Foreign Affairs.
- The Act contains provisions relating to rights in a jurisdiction over the zone and exploitation of resources of the zone.

- Ships and aircraft of all states in or over the zone are not subject to Section 8, restricted in or prohibited from the enjoyment of the freedom of navigation, over flight, the laying of cables and pipelines and other lawful uses of the sea related to navigation and communication recognised by international law.
- The Act identifies the following persons as Marine Conservation Officers: members of the Barbados Defence Force, the Royal Barbados Police Force, Officers of customs, Officers of the Coast Guard and any other person approved by Cabinet.
- Sets out certain offences and provides for a fine of \$5000 or imprisonment for a period of two years or both. In addition, the court may order the forfeiture of any vessel, structure, equipment, device or thing in connection with which the offence was committed.
- The Cabinet is empowered by Section 20 to make Regulations which are subject to affirmative resolution and shall be judicially noted.

There are no Regulations under this Act.

20. Marine Pollution Control Act (E)

This Act seeks to prevent, reduce and control pollution of the marine environment of Barbados from whatever source.

- creates the general offence of polluting the environment
- Addresses the management of the level of pollution by requiring the Head of the Environmental Engineering Division (the Director) to, as soon as practicable after the commencement of the Act, carry out a general investigation of the environment in order:
 - (a) ascertain the extent of pollution and significant sources of pollution from land based sources, sea bed activities, dumping activities and airborne sources; and
 - (b) characterise or describe that pollution.
- provides for designation of marine pollution control inspectors to discharge the various functions set out in the Act.
- confers on the Director the power to require a reduction of the level of pollution from an occupier of land on a landowner.

- provides the Director or inspector with the power to enter land to reduce, pollution level and confers the power to stop, alter and search to an inspection.
- The Act contains strong enforcement provisions. A person who commits a first offence under Section 3 of the Act is liable on conviction on indictment, to a fine of \$200,000 or to imprisonment for 5 years or to both. On summary conviction, the penalty prescribed is a fine of \$100,000 or to imprisonment for 2 years or to both. For second or subsequent convictions under Section 3, the penalty on indictment is a fine of \$400,000 or imprisonment for 7 years; or both; or on summary conviction, a fine of \$200,000 or imprisonment for 2 years or both. A person who commits an offence under the Act other than Section 3 offence is liable on summary conviction to a fine of \$5000 or to imprisonment for 2 years or to both.
- requires operators of a trade or business who are guilty of Section 3 offences, to pay in addition to the penalty an amount equal to the financial gain which he would have made as a result of the commission of the offence.

There are no Regulations under the Act.

**21. National Conservation Commission Act (E)
Cap 393**

This Act revises and consolidates the law relating to public parks, beaches and caves and makes provision for the conservation of sites and buildings of national interest.

- establishes the National Conservation Commission (NATIONAL CONSERVATION COMMISSION) and sets out its functions which include:
 - removing derelict objects from beaches, public parks, caves and public gardens;
 - controlling, maintaining and developing the public parks, gardens, beaches and caves of Barbados; and
 - advising the Minister on the removal of coral or any other thing from the ocean bed which may cause the encroachment of the sea.

Regulations

- National Conservation Commission (Fees) Regulations, 1983
- Parks and Beaches Regulations, 1974
- Control of Horses on Beaches Regulations, 1993.

**22. National Housing Corporation (Vesting of Property) Act, (L)
Cap. 233B**

This short Act transfers and vests in the National Housing Corporation (NHC) certain lands previously vested in the Crown.

**23. Pesticides Control Act, (E)
Cap. 395**

The Pesticides Control Act provides for the control of the importation, sale and use of pesticides.

- establishes a Pesticides Control Board to advise the Minister on matters relevant to the making of regulations and to carry out the provisions of the Act and the Regulations.
- provides for entry on land of inspectors and powers of inspectors.
- Sets out various offences.

Regulations

- Pesticides Control Regulations, 1974
- Pesticides Control (Labelling of Pesticides) Regulations, 1976

**24. Petroleum (Winning Operations) Act (E)
Cap.**

An Act to vest in the Crown the property in petroleum and natural gas in Barbados and to provide for the searching, boring for and obtaining of petroleum and natural gas and related matters.

- vests the property in petroleum in the Crown and provides for licences and leases to allow persons to search for and obtain petroleum in Barbados.
- Provision for powers to grant ancillary rights to a licensee or lessee in order to facilitate the search for and getting of petroleum.

Regulations

- Petroleum Winning (Drilling & Production) Regulations, 1950
- Petroleum & Natural Gas Conservation Regulations, 1950.

25. Port St. Charles Development Act (L) 1998/18

This Act provides for:

- (a) the vesting of reclaimed land in Port St. Charles Development Limited;
 - (b) the maintenance of the wharf, jetty, slip, dock, bridge, breakwater, works and ancillary facilities constructed at Heywoods by Port St. Charles Development Limited;
 - (c) the construction of a public access to the beach by Port St. Charles Limited; and
 - (d) related matters.
- provides for maintenance of Port St. Charles and use of works and facilities by the company and the rights of the Crown.
 - empowers Chief Town Planner to order the company to modify or remove works where it appears to him that any works carried on by the company are causing or likely to cause erosion or other damage to the foreshore. The company, if aggrieved by the Order, may request its review by the Minister.

No regulations have been made under this Act.

26. Prevention of Floods Act(E) Cap 235

This Act provides for the execution of works necessary to prevent and control flooding and inundation caused by excessive rains, high tides and the low level of various places causing inconvenience to persons and injury to health and property and to authorise the Minister to take all reasonable steps in connection therewith.

- empowers the Minister to by Order declare any area a flood area. Before an order may be made, the Minister must first lay before both Houses a map delineating the boundaries of the proposed flood area.
- empowers the Chief Technical Officer or anyone authorised by him to enter any premises to execute flood works. Where there is an immediate danger of flooding the CTO may enter premises without prior notice.

**27. Quarries Act, (L)
Cap. 353**

This Act provides for the registration, licensing and supervision of quarries, for the safety of workers employed in quarries, for fencing and relating matters.

- requires the owner of a quarry to register the quarry with the Chief Labour Officer.
- provides for the inspection and licencing of quarries and the notification of accidents at a quarry.
- empowers the Chief Labour Officer to make Regulations.

Regulations

- The Quarries (Miscellaneous Forms) Regulations, 1951

**28. Rural Development Commission Act, (L)
1995/12**

An Act to provide for the establishment of a Rural Development Commission which would inter alia provide for the improvement of social amenities, assist small farmers, and establish and develop cottage industries in rural areas.

- establishes the Rural Development Commission and sets out the functions of the Commission and the limitations of its powers.
- provides for the appointment of the Commission, the Director of Rural Affairs and staff.

- contains financial provisions such as the borrowing power of the Commission, use of funds and provides for accounts and audits.

**29. Sanitation Service Authority (E)
Cap.382**

This Act establishes a Sanitation Service Authority to perform the functions formerly performed by the Sanitation Service and Cemeteries Board and provides for related matters.

- provides for the establishment, constitutions, status and functions of the Sanitation Service Authority.
- sets out restrictions on the powers of the Authority.
- empowers the Minister to make Regulations prescribing fees chargeable by the Authority and the terms and conditions on which such fees shall be paid.

Regulations

- Sanitation Service Authority (Fees) Regulations, 1971.

**30. Shipping (Oil Pollution) Act (E)
Cap.296A**

This Act makes provision concerning oil pollution of navigable waters by ships, provides for civil liability for oil pollution by ships and gives effect to certain international conventions relating to pollution of the sea.

- Contains provisions aimed at preventing oil pollution. The Act prohibits the discharge of oils or mixture from a Barbadian ship in any part of the sea outside the territorial waters. It also prohibits the discharge of oils from pipelines and exploration areas.
- Part II deals with shipping casualties.
- Sets out liability for oil pollution and makes provisions with respect to the International Oil Pollution Compensation Fund.
- The United Kingdom Regulations apply to Barbados.

**31. Special Development Areas Act, (L)
Cap.296**

The Special Development Areas Act provides for the designation of special development areas, for the relief of persons carrying out work in those areas and to persons financing such works.

- persons wishing to be approved developers may apply to the Minister of Finance who may approve unconditionally, with conditions or refuse an application.
- an approved developer must comply with the Town and Country Planning Act.
- provides for exemption from certain taxes and makes for industrial and commercial building allowances.

**32. Storage of Petroleum Act, (E)
Cap.172**

This Act seeks to consolidate and amend the law relating to the storage and importation of petroleum.

- provides for the storage, importation, testing and sale of petroleum.
- empowers the Minister to “make, alter and amend regulations for the government of the petroleum warehouse and for the regulation of the taking and keeping of samples of petroleum to be tested under this Act”.

Regulations

- Storage of Petroleum (Licensing) Regulations, 1929
- Storage of Petroleum Regulations, 1932.

**33. Town and Country Planning Act, (L)
Cap.240**

This Act is described in its long title as an Act to “make provision for the orderly and progressive development of land in both urban and rural areas and to preserve and improve the amenities thereof, for the grant of permission to develop land and for other powers of control over the use of land, to confer additional powers in respect of the

acquisition and development of land for planning and for purposes connected with the matters aforesaid”.

- governs areas such as planning control and procedure regarding planning permission, duration and termination of planning permission, enforcement of planning control.
- provides for lists of buildings of special architectural or historic interest and enforcement of control in respect of listed buildings.
- contains provisions concerning the acquisition and disposal of land for planning purposes, compensation for refusal or conditional grant of planning permission and compensation for other planning permission.

Subsidiary Legislation

- The Town and Country Development Order, 1972
- The Town and Country Planning (Fees) Regulations, 1970
- The Town and Country Planning Regulations, 1972

34. Trees (Preservation) Act, (E) Cap.397

This Act provides for the preservation of trees by requiring a person desirous of killing a tree, the circumference of which is one metre or more at a point half a metre or more from the ground, to apply to the Chief Town Planner for a permit to do so. The Act does not apply “to a tree the killing of which is for the preservation of imminent danger or is in compliance with an obligation under another enactment”.

35. Underground Water Control Act, (E) Cap. 383

This Act provides for the control and use of the underground sources of water supply in Barbados and related matters.

- this Act establishes a Water Board, the functions of which were transferred to the Barbados Water Authority under the Barbados Water Authority Act, 1980-42 (S.32(2)).

- requires licences for the construction of wells and the abstraction of water from an underground well.
- provides for the application and grant of licences.
- makes provision for the alteration of the amount of water abstracted by a licensee in specified circumstances.

Regulations

- Underground Water Control Regulations, 1951

36. Urban Development Commission Act (L) 1997-10

An Act to provide for the establishment of an Urban Development Commission for slum clearance and the improvement of social amenities in urban areas and for related matters.

- The Act is of limited application. It only applies to land in urban areas that are designated under Section 5 or is vested in the Commission.
- empowers the Minister to designate urban areas for the purposes of this Act.
- the functions of the Commission as contained in Section 5, include:
 - (a) acquiring, holding or managing land and other property of any kind for the purposes of this Act; and
 - (b) disposing of such land or other property on such terms as the Minister determines; and
 - (c) constructing, maintaining and repairing buildings.

37. Wild Birds Protection Act, (E)
Cap.398

This Act provides for the protection of Wild Birds.

- prohibits the export of the skin and feathers of wild birds.
- creates the offences of knowingly killing or wounding a wild bird or possessing the dead body or any part thereof of any wild bird which was recently killed.
- contains weak enforcement provisions (fines of \$100 and \$250)

3.0 SECTION 2 - Adequacy and Effectiveness of the Laws

Specific Objective: *To assess the current legislation, noting those regulations which are applicable to coastal regions, and the effectiveness and adequacy of the legislation in Barbados.*

An assessment of the adequacy and effectiveness of the environmental, land use and building legislation requires an evaluation of the legislation to determine whether the legislation: (a) is satisfactory, that is whether it has the desired effect, (b) meets its objectives, that is whether there are gaps and omissions (c) is relevant.

The criteria for assessing the adequacy and effectiveness of the environmental, land use and building laws therefore are: **relevance, substantive weaknesses (gaps and omissions), and procedural weaknesses (fragmentation and overlap).**

3.1 Relevance

There are approximately 37 main pieces of legislation in Barbados which deal with environmental, land use and building issues, as summarised by Figure 1. Of these 37 statutes, 62% may be classified as environmental, 27% as land use and 1% as building. The most practical criterion for classifying these acts is to determine the predominant purpose and subject matter addressed by the legislation. However, given the linkages between environmental, land use and building issues there is some overlap among the various statutes.

Coastal zone

Generally, all 37 pieces of the existing environmental, land use and building legislation while not exclusive to the coastal zone of Barbados are applicable, to varying degrees. The coastal zone or coastal area of Barbados derives its definition from the Coastal Zone Management Act (CZMA) where the coastal area is defined as all those areas in which coastal resources are located. Coastal resources mean:

- the land, water and living resources associated with the shoreline marine areas of Barbados, including beaches, shorecliffs, coral reefs, coral rubble, algal beds, seagrass beds, sand dunes, wetlands and other ecosystem found along the shore together with the flora and fauna found in these areas.

This definition suggests a very narrow geographical area limited to the marine/coastal interface. However under the CZMA coastal zone management area or coastal management area means the area established as such by order made by the Minister. It is apparent therefore that the coastal zone management area comprises a wider geographic area than the coastal area. To date no official coastal zone management

area has been designated pursuant to the Act. For the purposes of this report therefore it is assumed that the coastal zone management area coincides with the urban residential corridor as defined by the national Physical Development Plan (PDP) amended 1988.

The 1992 Water Shed

The 1992 United Conference on Environment and Development (UNCED) represents a watershed in respect of the global environmental movement. Since UNCED several countries have established ministries of environment with supporting environmental legislation. It is apparent that the lack of resources (financial, human, technological) has impeded the efforts of some countries in modernising their environmental laws and strengthening institutional capacity.

In Barbados only 10 out of the 37 existing statutes dealing with environmental, land use and building issues have been enacted after 1992. Of these post-1992 legislation 6 are environmental in scope, and the remaining 4 address land use matters. At the same time, the majority of the pre-1992 environmental, land use and building laws were enacted in the early 1970s. Considering 1992 as the watershed for the creation of modern environmental laws therefore, then the majority of existing environmental laws in Barbados are not modern.

Generally, there tends to be a positive relationship between the enactment of environmental, land use and building laws and economic development. Over the last 30 years Barbados' developmental thrust has become less dependent on agriculture (rural) and more reliant on manufacturing and services (urbanisation). As a result there has been a concomitant increase in the scale and type of environmental, land use and building problems. At the same time it does not appear to be a commensurate increase in the environmental, land use and building laws. It is apparent therefore that the development of these laws has not kept pace with the industrialisation and urbanisation processes in Barbados.

The Physical Development Plan (PDP) amended 1988 for Barbados shows that for the period 1970-1980 there was on average a decline in the population in rural parishes like St. Andrews (-0.65 %), St. Joseph (-0.92 %), and St. John (-0.39 %). At the same time there has been an increase in the resident population within the coastal strip of Barbados, which the PDP refers to as the urban corridor. The urban corridor includes the coastal belt along the western and southern coasts. The main areas of population increase were Christ Church (1.25 %), St. Philip (0.72%) and St. James (2.23%).

One exception to this trend is the urban parish of St. Michael which includes the greater Bridgetown area. This parish experienced a net decrease of population of -0.92%.

This decline may be attributed to the flight of the urban population to the higher standard suburban residential districts. Such as St. James, Christ Church and St. Philip.

As a result, the urbanisation of the coastal belt over the last 30 years has resulted in an increase in land use conflicts, pollution, and population density which exert increased stress on the coastal resources (natural and environmental resources). As a result the urban corridor of Barbados constitutes a stressed region. At the same time, because the environmental, land use and building laws have not kept pace with the new challenges posed by the urbanisation and developmental processes they are in danger of becoming irrelevant.

Weaknesses

Apart from the apparent irrelevance of the existing environmental, land use, and building laws the legal framework appears to be affected by certain substantive and procedural weaknesses. The **substantive** weaknesses represent the obvious gaps and omissions within these laws, whereas the **procedural** weaknesses relate to the institutional weaknesses, fragmentation and overlap within the existing framework.

3.2 Substantive Weaknesses

(a) Environmental Legislation

Currently there is little or no coherent law to address the following environmental issues:

- implementation of multilateral environmental agreements (CITES, Climate Change, Basel Convention, etc.);
- protection and enhancement of ambient environmental conditions;
- prohibition and regulation of discharges to the environment;
- regulation of waste management and waste disposal operations;
- control of nuisances such as noise, dust, vibrations;
- integrated environmental management; and
- enforcement procedures

(b) Land Use Legislation

The Town and Country Planning Act provides the legal framework which facilitates the physical land use planning system. The land use planning system emerged in the 1950s and is geared towards ensuring the proper and orderly development of land.

This need arose as the island's economy was transferred from monoculture (sugar cane) to tourism, industry and services. A proper land use system is important to allocate the scarce land resources among the competing uses and to reduce inherent environmental and socio-economic conflicts between the land uses.

The Town and Country Planning Act (TCPA) makes provision for three key planning management functions:

(i) A National Development Plan System

The first national Physical Development Plan (PDP) for Barbados was approved in 1976. The current PDP was amended in 1988 and government is presently finalising recent amendments to the PDP amended 1998. The TCPA mandates that once in every 5 years after the date on which a development plan for the whole island comes into operation the Chief Town Planner is responsible for carrying out a fresh survey of the island with the view of making any alterations or additions to the existing development plan.

The PDP constitutes the single most important policy document used for patterning the land use and physical development of the island. It has introduced certainty and predictability to the decision-making process by allocating land for specific land uses. The PDP does not prescribe rigid land use zones such as that practised under the American approach to physical planning but rather the PDP provides a flexible approach where land uses are assessed according to the expected external impacts likely to be generated.

The TCPA prescribes that the PDP must include, among other things, both maps and descriptive text that illustrate the proposals. In particular the PDP is required to contain (a) the sites of proposed roads, public and other buildings and works, air-fields, parks, pleasure grounds, nature reserves and open spaces, (b) areas allocated for agricultural, residential, industrial, commercial or other land uses, and (c) lands to be compulsorily acquired by the crown.

(ii) A Development Control System

Generally, all proposals to develop land require planning permission which is issued under the development control system. Under the TCPA development has been given a fairly wide meaning that includes the carrying out of building, engineering, mining or other operations in, on, over or under any land, the making of material change in the use of buildings or other land or the subdivision of land. Development also extends to the sea bed within the 12 nautical mile territorial sea of Barbados. The Development

Order (1972) allows for certain classes of permitted development which do not require formal planning permission.

(iii) An Enforcement System

The planning legislation makes provision for the monitoring of development to ensure compliance with the legislation in general and in particular with permits issued by the Chief Town Planner. The Act provides for a variety of enforcement action including the service of enforcement notices, the service of stop notices, penalties including fines and imprisonment. The Act allows for appeals of decisions made by either the Chief Town Planner or the Minister.

Gaps

Some of the gaps within the land use legislation include:

- the lack of guidelines for Environmental Impact Assessment (EIA);
- the lack of preparation of plans at the intermediate and local level;
- lack of genuine participation by the public within the planning process;
- inadequate protection of natural areas;
- national parks legislation; and
- weak enforcement provisions

(c) Building Legislation

The existing building laws in Barbados do not provide for the following:

- A building code and national standards for the design and construction of buildings;
- disaster and emergency prevention;

3.2 Procedural Weaknesses

The procedural weaknesses within the existing environmental land use and building law embrace issues relate to weak or non-existent methods and linkages necessary for the effective implementation of the legislation and regulation. These include fragmentation, duplication and over-lap of jurisdictional and general institutional weaknesses.

(a) Environmental Legislation

Generally the responsibility for environmental management is fragmented among various ministries and results in an *ad hoc* response to environmental issues. Although there is currently an institutional focal point for comprehensive environmental management, the Ministry of Environment, Energy and Natural Resources, the absence of supporting comprehensive legislation limits the ability of the Ministry to effectively coordinate national environmental policy.

A good example relates to the management and control of pollution where under existing laws these responsibilities fall under the Ministry of Health through an out dated Health Services Act. Another issue relates to the management of hazardous chemicals and substances which involves several agencies such as the Ministry of Environment, Energy and Natural Resources, the Ministry of Agriculture, the Ministry of Health, and Customs Officers.

There has been some general attempt to enact legislation to address some resource issues but the legislative framework is still fragmented, outmoded and generally underutilised in terms of weak enforcement. Examples include:

- Water resource protection;
- surface water management;
- conservation of natural heritage resources, flora and fauna;

(b) Land Use Legislation

There are the following procedural weaknesses:

- the need to strengthen the mandatory consultation process by including critical agencies such as the Coastal Zone Management Unit;
- provide for greater public participation in the planning process by increasing access to information.

(c) Building Legislation

The main weakness with the existing building legislation is the need to establish a focal point to coordinate the implementation of building design standards.

4.0 SECTION 3 - Adequacy of Laws to Cope with Sea Level Rise

Specific Objective: *To assess the adequacy of the current legislation and regulations to cope with sea level rise under each of the scenarios, which have been suggested for Barbados.*

Section 1 of this report identified the likely impacts that will result from SLR. Three direct inputs have been identified (i) coastal erosion; (ii) flooding, and (iii) salinization. It is also anticipated that a number of indirect impacts will occur which will generally affect a number of socio-economic sectors.

The types of impacts expected to result from SLR are not new in nature. The interaction of SLR and the biophysical environment is projected to intensify the existing impacts in terms of increased magnitude, increased rates, increased frequencies and increased areas of impact.

Whereas Section 2 of this report provides a general assessment of existing environmental land use and building laws this section now focuses specifically on the **adequacy** and **effectiveness** of existing laws to deal with the likely impacts of SLR.

Figure 2.0 below provides a framework for assessing the adequacy and effectiveness of existing laws to cope with the impacts of SLR. The overall objectives of the matrix are to (a) determine the type of legal responses that are required to address the particular impact; (b) determine whether the existing laws provide this particular response and (c) determine whether the legal response is satisfactory.

FIGURE 2.0

Impact	Legislation	RESPONSE			
		Prevention	Status	Reduction	Status
COASTAL EROSION	CZMA	Integrated CZM	2	Integrated CZM	2
		Sea Defence Structures	2	Economic Instruments	2
		Beach Nourishment	2		
		EIA	1		

		RESPONSE			
Impact	Legislation	Prevention	Status	Reduction	Status
	TCP Act	Building line set backs	2	Land Use Control	2
		Land Use control (type, density, siting)	2	Selective Relocation	0
		EIA	0		
		Selective Relocation	0		
	Health Services Act	Control of Land-based Sources of Pollution	2	Land-based sources of pollution	2
	Trees Preservation Act	Protection of trees	2	Protection of trees	2
	Cultivation of Trees	Promotion of tree cultivation	2	Economic incentives	2
	Land Acquisition Act	Land use control acquisition for public purpose	2		
	Crown Lands Act (Vesting and Disposal Act)	Land use and Land Tenure Control	2		
	Marine Pollution Act	Marine Pollution	2	Marine Pollution	2
		Land-based Sources	2	Land-based Sources	2
				Economic Instruments	2
	Environmental Management Act	Environmental Planning Standards and Policies	0	Environmental Planning and Policies	0
		EIA	0	EIA	0
	Building Code	Design & Construction Standards	0		

Impact	Legislation	RESPONSE			
		Prevention	Status	Reduction	Status
FLOODING	CZMA	Sea Defence Structures	2	ICZM	2
		Integrated CZM	2	EIA	1
		EIA	1		
	TCPA	Building line set back	2	Land Use Control	2
		Land Use Control	2	EIA	0
		Building standards (Type, density, siting)	2	Selective Relocation	0
		EIA	0		
		Selective Relocation	0		
	Prevention of Floods	Execution of flood works	2	Execution of flood works	2
		Prohibition on building and other activities in flood area	2	Declaration of flood areas	1
	Health Services	Prevention, Treatment and Suppression of Disease	2	Requires drainage and grading of certain lands before commencement of building (Health Services (Building) Regulations 1969	2
		Maintenance of Sewerage Works	2	Building Standards	1
	Land Acquisition	Land Use Control	2		
	Trees Preservation	Protection of Trees	2	Protection of Trees	2
	Cultivation of Trees	Planting of trees (numbers, density, area of land which may be cultivated)	2	Economic Incentives	2
	Crown Lands (Vesting and Disposal)	Land Use Control	2		

		RESPONSE			
Impact	Legislation	Prevention	Status	Reduction	Status
	Building Code	Design Standards	0	Building design administration Building design monitoring Building design enforcement	0 0 0
	Emergency Powers			State of Emergency	3
	Disaster Management Act	Disaster preparedness	0	Disaster Mitigation & Management Response & Relief	0 0
SALINIZATION	TCPO	Land use control	2	Building standards	0
	CZMA	Standards for water quality	2		
	Health Services	Water Quality Monitoring	1		
		Water Quality Control	1		
	BWA	Water Quality	2	Conservation Measures	1
		Water Production	2	Water Saving Incentives	
		water Consumption	2	Economic Instruments Fines Building requests e.g water tanks	1 2
	Underground Water Act	Management of Water Resources through Licenses		Monitoring of Water Resources	2
	Environmental Management Act	Environmental Planning	0	Environmental Management	0
		Environmental Standards	0		

0 = not available 1 = inadequate 2 = adequate

Generally there are two broad categories of possible legal responses to the projected impacts. The legal response may either **prevent** the impact or it may **reduce** the effect of the impact through proper management and mitigation measures. The criteria for determining the effectiveness of the existing law involve the assignment of (0) where the legal response does not exist, (1) where the legal response exists but is inadequate and (2) where the legal response is adequate. The values are not weighted and are not intended to rank the legal response. Where (0) is assigned there is no existing legislation to provide the legal response.

4.1 Coastal Erosion

(n) Prevention

Coastal erosion results from the interaction between the agent of erosion (waves) and the land. The legal responses required to prevent coastal erosion may include:

- strengthening the resilience of the coastal ecosystem such as coral reefs to enhance their capacity to protect the coastal regions from direct impacts of waves and storm surges;
- standards and guidelines to control pollution
- land use standards and policies to control development
- EIA guidelines to evaluate proposed development
- integrated coastal zone planning to identify sensitive coastal resources and restrict harmful activities, provide for the erection of coastal defence structures and coastal engineering works such as beach nourishment;
- compulsory land acquisition.

(b) Reduction

Sometimes it is not practical to prevent coastal erosion and other management strategies are required to reduce its effects. Some possible legal responses to reduce coastal erosion include:

- physical development plans and policies - which include strategies such as 'set back', selective relocation of critical agencies e.g. fire, health, etc.
- coastal zone management plans - which demarcate coastal zone management areas
- environmental management plans - which encourage protection, preservation and conservation of natural resources.

Assessment of Existing Laws

Notwithstanding the existence of approximately 37 pieces of environmental, land use and building legislation only a limited number of Acts relate to the type of impacts that will result from SLR.

(i) CZMA and TCPA

These two Acts work in tandem to ensure the proper allocation of coastal resources, the reduction of conflicts between competing landuses, and the proper development of land. They represent a marriage between pre-1992 and post-1992 legislation.

The TCPA was enacted in the late 1960's at a time when the Barbadian economy was mainly a monocultural (sugar cane) one. The CZMA was proclaimed on April 1, 2000 at a time when the modern Barbadian economy has been diversified and is now dependent on services, industry and agriculture.

The *raison d'être* of the CZMA contrasts with that of the TCPA. The CZMA represents a modern piece of environmental legislation that promotes an ecosystem approach to resource planning. The Act supports the need for strong scientific analysis to inform policy interventions. It is innovative by its application of resource evaluation as a means of assessing environmental damage and incorporates the emerging "pollution pays" principle. However the Act fails to provide for the codification of the Precautionary Approach along with other principles of best practices.

The CZMA expressly amends the TCPA when it requires the Chief Town Planner (CTP) to give regard to the CZM plan in making decisions related to the coastal zone. The Minister responsible for planning is prevented from making decisions that conflict with the CZM plan.

On the other hand the TCPA has its roots in the post World War approach to planning in England that was fuelled by the redevelopment of the town and country areas in Britain. The TCPA has also been influenced by the earlier planning movement at the beginning of the 20th Century which was based on public health concerns.

Notwithstanding the points of departure between those two acts they work in harmony to provide the following responses to coastal erosion.

(a) **CZMA**

This Act provides for:

- the preparation of a CZM plan to operate within a specific part of the coastal area.
- development and maintenance of coastal structures, including defence works
- the development of standards for EIA
- defines restricted activities and restricted areas for specific activities
- provides for the preservation, conservation and protection of coastal resources.

(b) **TCPA**

This Act operates jointly with the Development Order (1972). The TCPA presents an overarching planning framework whereas the Development Order (1972) prescribes detailed planning standards and development guidelines.

Together these legal instruments provide for:

- the preparation of a national Physical Development Plan (PDP) which outlines general land use policy. The PDP consists of a survey and analysis and specific strategies to ensure the achievement of national planning objectives such as national settlement objectives; areas requiring special management such as sensitive ecosystems, ground water protection areas and national park systems;
- development standards, densities, building set backs, restricted building and development zones.

Health Services Act

In the absence of a comprehensive Environmental Management Act the Health Services Act and its numerous regulations address pollution control issues. This Act contains provisions for the prevention, control and management of land-based sources of pollution degrade the air, land and water.

Marine Pollution Act

This is one of the most modern pieces of environmental legislation in Barbados since its proclamation on April 1, 2000. Its primary purpose is to prevent, reduce and control pollution of the marine environment of Barbados from whatever source whether it be land-based or marine generated.

The Minister and Head of the Environmental Engineering Division are required under the act to give regard to the CZM plan. The Act in its effort to prevent and control pollution introduces innovative measures such as hefty fines for offenders. First time offenders are liable for fines ranging between \$100,000 or 2 years to \$200,000 or 5 years. For second or subsequent offenders the penalties range from \$200,000 or 2 years to \$400,000 or 7 years.

In order to prevent companies from treating those penalties under the Act as a normal cost of doing business, the Act provides that in addition to any penalty ordered the person convicted is liable to pay an amount calculated to be equal to the financial gain made as a result of the commission of the offence.

Trees Preservation Act

Trees perform several useful environmental functions. With respect to coastal erosion they can help to stabilise soils and prevent or reduce mass wastage on sloping areas. In particular some species such as mangroves form an integral part of sensitive ecosystems such as wetlands and provide protection against storms, tides, hurricanes and storm surges.

Under the Trees Preservation Act planning permission is required for the felling of trees with a circumference over 1 metre measured at 1 metre from the ground. This Act in effect protects existing trees of prescribed dimensions but does little to encourage replanting.

Cultivation of Trees

This Act provides for the promotion of tree cultivation. Incentives are offered to persons who cultivate certain types of trees. The incentive may include tax contribution payment and fruit tree subsidy. Subsidies are granted only if the owner has a certificate from the Chief Agricultural Officer. Trees must be grown in a prescribed and approved quantity and distance from each other. Area of land on which trees are to be grown must not be less than ½ acre.

Land Acquisition Act

This Act empowers the acquisition of land for a public purpose. It may be necessary to compulsorily acquire land in order to facilitate a reduction of the number of persons and property that are exposed to the risk of coastal erosion. Compulsory acquisition will allow for the implementation of appropriate preservation and conservation strategies.

Crown Lands Act

This Act provides for the vesting of land in government agencies. This option will allow for the proper management and control of areas exposed to the risks associated with coastal erosion. All public lands, piers, wharves, bridges, works and buildings and other public property are transferred too and vested in the Crown.

Gaps/Omissions

The existing laws that address the issue of coastal erosion contain the following weaknesses:

- lack of EIA guidelines
- lack of provisions that promote selective relocation of critical services (fire, ambulance)
- lack of comprehensive environmental legislation
- lack of comprehensive environmental standards and practices
- failure to incorporate the precautionary principle and other principles of best practice.

4.2 Flooding

Inundation of low-lying coastal areas is expected to occur as a result of SLR. The impact of flooding will be most evident where there is a vulnerable population. As already discussed, there are several areas along the west and south coasts of Barbados that will be susceptible to inundation. The legal responses required to prevent flooding include:

(a) Prevention

- erection and maintenance of coastal defence works
- land use standards and policies such as building set back, flood plain mapping, restricted development areas
- integrated coastal zone planning
- EIA guidelines to evaluate proposed development
- compulsory acquisition of land and selective relocation of critical emergency agencies (e.g. fire, health institutions).
- implementation of disaster plans that include the designation of vulnerable areas
- provisions for the declaration of a state of emergency
- implementation of minimum design and construction standards

(b) Reduction

A combination of anticipatory management and mitigation strategies can assist in reducing the effects of flooding caused by SLR. These include:

- implementation of disaster plans including warnings, relief and response
- monitoring and enforcement of minimum design and construction standards
- selective relocation of critical emerging agencies (fire, ambulance)
- public health policies to reduce incidences of vector borne and water borne diseases.

Assessment of Existing Laws

CZMA & TCPA

Land Acquisition Act]	
Crown Lands Act]	
Cultivation of Trees Act]	same as for Coastal Erosion
Trees Preservation Act]	
Health Services Act]	

Prevention of Floods Act

This Act provides for the execution of works necessary to prevent and control flooding caused by excessive rains and by high tides which may be injurious to property or health.

The two main actors under the Act are the Minister and the Chief Technical Officer. The Minister is empowered to declare flood areas but must first have parliamentary approval. The Chief Technical Officer or his nominee is empowered to enter on premises to execute flood works. Flood works include (a) construction, alteration, repair, cleaning or grading of any bank, channel or watercourse; (b) digging or clearing of wells and drains; or the removal of any plant, tree, growing crops, building, structure or other things that prevents the free drainage of water. The works carried out must be for the protection of persons and lands from floods and inundations.

Generally the Act provides an adequate framework for addressing the issue of flooding. There appears to be an imbalance between the prevention and control of flooding in favour of flood reduction. This may be remedied by including an express requirement for flood prevention management and planning.

Emergency Powers Act

This provides for the declaration of a state of emergency where a public emergency has arisen as a result of a flood, among other things. When a state of emergency has been declared the Cabinet is empowered to make orders with respect to reducing the effects of the emergency. This Act will operate in tandem with the Prevention of Floods Act and disaster preparedness operations to offer adequate response to the threat of flooding. The Emergency Powers Act however is reactive in nature and is only triggered by an actual emergency. However it is desirable that greater emphasis is placed on anticipating imminent threats.

Gaps/Omissions

The existing laws that address the issue of flooding contain the following weaknesses:

- lack of EIA guidelines
- lack of provisions which promote selective relocation of emergency services
- lack of a building code and design and construction standards
- lack of disaster management legislation

- weak enforcement procedures to reduce risk associated with water-borne and vector-borne diseases
- weak enforcement procedures and anticipatory planning requirement relating to the management and maintenance of drains, culverts, water courses including gullies, private wells, etc.
- failure to incorporate the precautionary principle and other principles of best practice.

4.3 Salinization

Salinization involves the saline intrusion of the freshwater supply. This may result from the inland migration of the saline-freshwater interface or through over-pumping of the freshwater supply.

The legal responses to salinization include:

(a) *Prevention*

- control of land uses within catchment areas of ground water wells
- water quality monitoring and control
- ground water recharge

(b) *Reduction*

- water conservation
- water quality monitoring
- land use control
- desalination

Assessment of Existing Laws

TCPA

This Act provides for the preparation of a National Physical Development Plan (PDP) to ensure the proper development of land in Barbados. The island receives all of its water from underground aquifers and as a result there are strict planning guidelines in force to prevent contamination of the water supply. All lands in Barbados are classified into 5 water protection areas (WPA) where zone 1 areas are the most restricted and Zone 5 the least restricted areas. Under the policy, the Zone 1 WPA's coincide with the

catchment areas of the wells used to abstract groundwater. No new development is allowed within Zone 1 WPA which are relegated to mainly agricultural and related uses.

The management of Zone 1 WPA is shared among the Town Planning Department (land use control), the Barbados Water Authority (water production) and the Environmental Engineering Division (pollution control).

The Development Order was recently amended to include provisions aimed at promoting water conservation. Under the Development Order new building standards require all buildings of a prescribed size (floor and roof area) to provide water storage tanks. This measure is aimed at reducing the demand on the public water supply.

CZMA

As elaborated earlier this Act provides for the preparation of a CZM plan which will, among other things, provide for the preservation, conservation, protection and management of particular coastal resources. The CZMA works in tandem with the TCPA to regulate and control activities within the coastal area. Under the CZMA all development that will affect the coastal resources must undergo an environmental assessment.

The environmental assessment of proposals will allow for the identification of potential effects and the measures required to avoid or reduce these impacts.

Health Services

Under the Health Services Act the Environmental Engineering Division (EED) is responsible for pollution control and management. The EED shares the responsibility of water quality monitoring and control with the Barbados Water Authority (BWA). The EED uses water quality standards developed by the WHO. These are used as minimum standards. A consistent monitoring programme will assist with the early identification of salinization of the groundwater.

Barbados Water Authority Act

Under this Act the Barbados Water Authority (BWA) has sole responsibility for the supply of potable water to the public. One of the causes of salinization is the over-pumping of the freshwater lenses. One way to prevent salinization therefore is to ensure that the freshwater lens is not drawn down too far. One of the main driving forces behind the over-pumping of the freshwater lense is the high consumption demand exerted by the various sectors, residential, industrial, tourism, agricultural recreational.

As a result of the increasing demand for freshwater by the various sectors in Barbados, the BWA has introduced a number of conservation strategies. This is necessary to ensure that the BWA achieves its primary objective in providing an adequate supply of water while maintaining an acceptable quality.

These strategies include:

- the provision of water saving devices
- the application of economic instruments such as fines and penalties;
- the prohibition of certain activities e.g. washing cars, watering lawns, etc, use of the public supply during the dry season;
- augmentation of water supply through desalination;
- augmentation of groundwater through recharge of the aquifer.

Underground Water Act

Under this Act all ground water in Barbados is vested in the Crown. No person may extract groundwater without the permission of the BWA. The BWA issues licences to private persons and companies to pump water primarily for irrigation. Only the BWA can supply potable water for public consumption. The Act therefore allows the BWA to control the rate and amount of draw down of groundwater through the licence system.

Gaps/Omissions

The existing laws that address the issue of salinization contain the following weaknesses:

- overlap and duplication of the functions of water quality monitoring and control;
- lack of a comprehensive environmental management act;
- lack of comprehensive environmental standards, guidelines, etc;
- absence of EIA guidelines.

4.4 Proposed Legislation

The most obvious weakness of the existing legal framework to cope with the projected effects of sea level rise in Barbados is the absence of an Environmental Management Act (EMA), a Building Code and Environmental Impact Assessment (EIA) Guidelines. However, while in a strict sense there are no existing legal instruments or provisions in law that currently fill these lacunae, the government has recognised these obvious gaps and various pieces of legislation have been proposed to address these concerns.

(1) *Draft Barbados National Building Code*

In 1992 the Barbados National Building Code was published by the Barbados National Standards Institution. The draft code is maintained by the Barbados National Standards Institution on behalf of the Government of Barbados. It was prepared for the Government of Barbados by the Australian Building Code Consultants with the assistance of the Commonwealth Fund for Technical Cooperation. The Barbados National Building Code is based on the Caribbean Uniform Building Code (CUBIC) published in 1985.

The draft code sets out technical requirements and standards for the design and construction of buildings in respect of issues concerning structural sufficiency and durability, fire safety, health and amenity which are regarded as essential minimum provisions in the public interest. Also included are standards for the manufacture, use and testing of building materials, components and systems. The code takes into account the particular climate and geological conditions of Barbados especially the nature of the Caribbean environment and the region's susceptibility to hurricanes and earthquakes.

Current Practice

Despite its preparation over eight years ago, to date there has been no accompanying legislation to support the implementation of the draft building code. At present the code only exists as a mere recommendation and proposal.

Although it lacks the requisite supporting force of law the Town and Country Planning Department and the Ministry of Public Works and Transport currently utilise the draft code to guide and inform their decisions. The Town and Country Planning Act (TCPA) empowers the Chief Town Planner to give regard and material consideration to documents such as the draft code which may assist with planning decisions.

In an effort to regularise the implementation of the draft code the Government of Barbados, under the coordination of the Ministry of Public Works and Transport, is

currently considering the establishment of a Building Authority and the preparation of a Building Act.

The Building Act will provide the legislative framework for the establishment and operation of a Building Authority. The Act will also give the legal effect for mandating the application of the Building Code, formulation of building regulations for the operation of the Authority and a building control system; staffing; registration of building practitioners; and penalties for non-compliance.

(2) *Draft Environmental Legislation*

In 1997 the Government of Barbados commissioned a study to review and assess the framework for environmental management and planning in the island. The study was entitled "Environmental Management and Land Use Planning for Sustainable Development" (EMLUP) and its main outputs included:

- Draft Environmental Management Act
- Environmental Impact Assessment Guidelines and Procedures for Barbados
- Environmental and Natural Resources Management Plan

One of the critical weaknesses which the EMLUP study sought to address was the lack of coordination of environmental management in Barbados. The proposed Environmental Management Act (EMA) and the Environmental and Natural Resources Management Plan (EMP) are intended to be the main instruments for remedying the inherent gaps, overlaps and fragmentation of the existing approach to environmental management.

The proposed Environmental Management Act will provide the necessary legal framework to address the following environmental and natural resources management issues:

- environmental planning
- coastal zone management
- terrestrial natural heritage conservation
- environmental protection (pollution control, nuisances, hazardous substances)
- water resources management

The lynch-pin of the proposed EMA is the creation of the office of Director of Environmental Management who will have responsibility for coordinating environmental management.

One of the glaring weaknesses of the proposed EMA is that although it contains a section which seeks to address the implementation of international agreements it concentrates on the ratification of the agreements but excludes their implementation. The proposed EMA does not, for example, address the operationalisation of important conventions such as the UNFCCC and the Kyoto Protocol at the national level.

While the proposed EMA seeks to create the legal foundation for the preparation of a number of management plans such as a National Park Plan, a Water Resources Plan, etc., it fails to address the preparation of the overall Environmental Management Plan (EMP).

Current Practice

Almost two years after the completion of the EMLUP study there have been no ensuing legislative changes to give effect to its recommendations for strengthening the legislative framework. The current practice remains the same as before the EMLUP study except for the recent enactment of legislation to address coastal zone management and marine pollution issues.

The recent proclamation of the Coastal Zone Management Act (CZMA) and the Marine Pollution Act (MPA) provides some legislative responses to deal with coastal zone management issues and pollution of the coastal and marine areas. However, the proposed EMA is intended to incorporate these two existing Acts into a single instrument in order to create the necessary legislative synergies and coordination of the management of environmental issues.

The prolonged delay in enacting the proposed EMA will give the CZMA and the MPA sufficient time to be implemented outside the EMA framework and this could eventually undermine the need for the EMA as proposed by EMLUP. At the same time this will result in the continuation of a fragmented approach to environmental management which was clearly identified by EMLUP as one of the main constraints to effective environmental management.

Currently the issues of pollution prevention and control are addressed by the outmoded Health Services Act and its myriad regulations. In addition, the Government is proceeding with the preparation of a Waste Management Act that will provide for regulation and planning of waste management and disposal.

- ***Environmental and Natural Resources Management Plan (EMP)***

The EMP is intended to be the master environmental strategy plan. It provides a comprehensive framework for environmental management. The EMP integrates other sectoral plans and policies that affect environmental and natural resources management.

The essential elements for the successful implementation of the EMP are (i) an institutional framework for environmental management centred on a reorganised Ministry of Environment and (ii) a legal framework provided by the proposed Environmental Management Act. To date both of these elements are missing since there has been no institutional nor legislative changes based on the recommendations of EMLUP.

- ***EIA Guidelines***

One of the outputs of the EMLUP study is the draft EIA Guidelines and Procedures for Barbados. It seeks to provide the overall framework for undertaking EIA in the island including the identification of triggering mechanisms; establishment of an assessment panel; public consultations; and the inclusion of economic and strategic assessments within the EIA process.

The EMLUP study recommends that the TCPA should be amended to include the provision for EIA. It also recommends that the Planning Legislation should be amended to include public consultations and access to information for specified classes of development.

Current Practice

There is no express statutory basis for requiring a proponent of development to prepare an EIA or Strategic Environmental Assessment. In the absence of appropriate legislation the Chief Town Planner currently utilises the statutory provision within the TCPA which allows for the request of additional information in order to request EIAs from proponents. Current practice is the same as obtained before the EMLUP study.

Summary

The Government has recognised the need to fill the lacunae within the existing legal framework which will lead to improved coordination of environmental management and ultimately assist the island in coping with the effects of sea level rise. As a result a number of draft legislation have been prepared but are yet to be implemented.

Without the necessary action these drafts will merely represent the government's intention to remedy the problems.

In the meantime practitioners have been using, *de facto*, the various proposed legislation to guide their decisions. The scope of this report which focuses on existing legislation does not allow for any detailed assessment of these proposed legislation.

Furthermore, it must be noted that it is difficult to project a timeframe within which the proposed legislation may be enacted. For example, the draft code has been prepared for over 8 years and the proposed EMA has been prepared nearly two years ago yet both are still to be implemented.

The actual preparation and drafting of legislation is time consuming. Hence given government's already crowded legislative agenda, the technical nature of the legislation, and the need for further consultations the final preparation of the proposed legislation may be some time away.

5.0 SECTION 4 - A Revised Legal Framework

Specific Objective: *To propose revisions to the current legislation or new legislation aimed at minimizing or eliminating the adverse impacts of sea level rise, noting the outputs of (3) above for Barbados.*

The assessment of the existing environmental land use and building laws contained in the matrix (Figure 2) in Section 2 would suggest that the current laws provide an adequate response to address the potential or likely effects of sea level rise. However, the following weaknesses have been identified within the existing framework:

Coastal Erosion

- *lack of environmental impact assessment guidelines*
- *lack of provisions that promote selective relocation of critical services (fire, ambulance)*
- lack of comprehensive environmental legislation
- lack of comprehensive environmental standards and practices
- failure to incorporate the precautionary principle and other principles of best practice.

Flooding

- lack of EIA guidelines
- lack of provisions which promote selective relocation and emergency services
- lack of a building code and design and construction standards
- lack of disaster management legislation
- weak enforcement procedures to reduce the risk associated with water borne and vector-borne diseases
- weak enforcement measures and anticipatory planning requirement relating to the management and maintenance of drains, culverts, and water courses including gullies, private wells, etc.

- failure to incorporate the precautionary principle and other principle of best practices.

Salinization

- overlap and duplication of the functions of water quality monitoring and control
- lack of a comprehensive Environmental Management Act
- Lack of comprehensive environmental standards, guidelines, etc.
- absence of EIA guidelines.

5.1 Summary of gaps/omissions in current legislation

Two broad shortcomings may be identified with respect to the existing legislative framework in Barbados. The first is the fragmented nature of the legislation; the second, the failure to address certain important issues.

To date, the majority of the environmental legislation in Barbados has been developed as a response to the occurrence of a particular problem, resulting in various issues being addressed but in a piecemeal fashion. This approach may be attributed to the fact that Barbados has until recently been primarily an agriculture based economy with little emphasis being placed on industries or manufacturing. Barbados has mainly enacted sectoral legislation aimed at addressing specific environmental concerns and human behaviour (e.g. *Health Services Act, Cap 44; Health Services (Building) Regulations, 1969; Pesticides Control Act, Cap 395*) as well as resource oriented legislation aimed at the conservation and protection of natural resources (e.g. *Barbados Water Authority Act, Cap 274A; Underground Water Control Act, Cap 283; Marine Pollution Control Act (1998-40)*).

However, this ad hoc approach to legislation does not adequately deal with the myriad issues which arise from modern resource use or the technological and scientific advances taking place worldwide. The need for comprehensive legislation to provide an integrated approach to environmental management becomes even more apparent in light of the increasing environmental issues which impact on the global commons, such as climate change. These issues require action at the domestic level.

5.2 Recommendations

The following likely impacts from sea level rise were identified in Section Three: (1) coastal erosion (2) flooding, and (3) salinization. The assessment of the legislation in the light of these impacts identified various lacunas. In general, the following amendments are necessary to cure the defects in the existing legislation:

- (a) The strengthening of the content of legislation and the promotion of effective enforcement measures.

The Prevention of Floods Act is one example of legislation in need of content strengthening. The Act is more focused on mitigation than on prevention. There is a need for stronger preventative measures and the express requirement for the preparation of flood management plans as well as provision for flood plain mapping.

- (b) Enforcement measures in several pieces of legislation are inadequate. For example, the penalties for committing an offence under the Trees (Preservation) Act are a fine of \$1000 or imprisonment for a term of 6 months or both. The penalties contained in some pre-1972 legislation must be amended to provide a realistic deterrent in modern day society.
- (c) Provision for the selective relocation of critical services. The legislation governing the issues of flooding and coastal erosion both lack provisions to facilitate the selective relocation of critical services. This omission could be addressed by an amendment to the individual pieces of legislation or such a provision may be housed in a Disaster Management Act.

Priority Areas

While some of the necessary changes to the environmental legislation may be accommodated by amending the current legislation, in other instances new legislation is necessary. The following proposals are identified as priority areas.

(1) *Legislation to deal with climate change*

This may be dealt with by the enactment of a Climate Change Act, which would focus exclusively on the question of climate change. This approach was adopted by Japan, which is the first country to enact legislation specifically related to climate change in the form of its "Law for the Promotion of Policy and Measures on Climate Change". This Act establishes a strategy for climate change, deals with a mandatory action plan for greening operations at the government level, sets out a voluntary action plan by business enterprises and identifies centres to facilitate the dissemination of information. Alternatively, provisions dealing with climate change may be contained in a framework

Environmental Management Act. Regardless of which method is adopted, the setting up of a Climate Change Unit, to manage the legislation is vital. The unit would also provide a necessary focal point for coordination of action under the Act.

One of the critical functions of the Climate Change Unit should be to increase the involvement of the civil society in the decision-making process. It is recognised that Government alone cannot effectively undertake the required adaptation strategies. The civil society has an important role to play in reducing and preventing the impacts of SLR. The Climate Change Unit therefore should be mandated to encourage the civil society as a partner in the adaptation process.

(2) *An Environmental Management Act*

In light of the fragmented nature of the legislation, there is dire need for a framework Environmental Management Act to provide a comprehensive system of environmental management. This legislation should set out the principles which are to guide policy formulation and decision makers. The Act should provide for

- the implementation of multilateral environmental agreements (MEAs) such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, and the Basel Convention on the transboundary shipment of Hazardous Wastes, among other.
- the comprehensive management of pollution and incorporation of the polluter pays all principle.
- the protection of environmental and natural resources and their sustainable utilization.
- the formulation of a comprehensive environmental management policy..
- the incorporation of the principles of sustainable development and other associated principles such as the precautionary principle, cost benefit analysis and best available technology (BAT) and other best practices
- Environmental Impact Assessment (EIA) guidelines.
- public participation in environmental decision – making and access to information.

(3) *Disaster Management Act*

Legislation is needed to govern disaster management and to provide for the coordination of disaster management agencies. This legislation could provide for the selective relocation of critical services and a flood management plan. The Caribbean Disaster Response Act provides for the implementation of the Agreement setting up the Caribbean Disaster Response Agency and of certain provisions contained in the Headquarters Agreement of that Agency. The Act is an implementation Act and not an Act dealing with disaster management on a national scale. There is therefore still the need for national legislation.

(4) *A Building Code and the establishment of a Building Authority*

There is the critical need for the provision of legislation setting up minimum design and construction standards and a national agency to coordinate the implementation of these standards.

(5) *Provision of Environmental Impact Assessment legislation*

The requirement of an EIA is a legal technique which is used to implement environmental principles and standards. The technique process requires that an EIA be conducted prior to the undertaking of a proposed activity. It incorporates environmental planning with development planning and seeks to assess the potential damage to environmental resources and minimize that damage. Its genesis is traced to the United States National Environmental Policy Act 1969 and the process has assumed great importance in domestic and international environmental law. Indeed, EIA provisions may be found in numerous international treaties and regional agreements.

The EIA process may be incorporated into the legislation of Barbados by way of the inclusion of guidelines in a framework Environmental Management Act, as stated earlier, or by the adoption of stand alone EIA legislation setting out strict, detailed provisions. In either event there must be a clear designation of an authority to act as a centralized focal point for governing the EIA process.

(6) *Incorporation of the precautionary principle*

This principle originated with the *Vorsorgeprinzip* principle of German law. It became part of international law as a result of German proposals made to the International North Sea Ministerial Conferences. The principle was adopted in 1992 at the Rio Declaration at the United Nations Conference on Environment and Development (UNCED).

Principle 15 of the Rio Declaration contains a formulation of the principle and states:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation.

The principle has been described as a principle of customary international law. It is contained in numerous treaties, both regional and international, e.g, the United Nations Convention on Straddling Fish Stocks and Highly Migratory Fish Stocks, the United Nations Framework Convention on Climate Change, the Preamble to the Convention on Biodiversity, the Convention on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa.

The precautionary principle is especially relevant to the issue of sea level rise and its impacts . The absence of scientific certainty as to the impacts should not be used as an excuse to postpone taking action. The principle should inform the approach to coastal zone management and planning and must of necessity be contained in legislation.

(7) Further work

An analysis of the legislation covered in this study reveals the need for further work in order to obtain a more detailed assessment of its effectiveness. The terms of reference of this Report did not allow for this assessment to be undertaken. In particular , it is necessary to identify indicators that provide for the monitoring of the operationalisation of the laws. Possible examples of the type of indicators include the number of prosecutions, the type and amount of penalties imposed by the court and the public perception and awareness of the legislation.

In addition, there is the need for a comprehensive analysis of the effectiveness of some penalties prescribed by the existing environmental, land use and building legislation in deterring unacceptable behaviour of resource users and decision makers. The analysis should consider the application of alternative methods of encouraging compliance such as economic instruments and voluntary compliance mechanisms.

Appendix I

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