



## 1. Introduction

This section forms the second part of the National Sustainable Development Policy. Detailed policy recommendations pertaining to specific sectors and/or issues are articulated, all with a view to fostering and supporting the pursuit of Sustainable Development. It must be noted however that although policy recommendations are detailed in a sector by sector approach, policy makers and stakeholders are encouraged to adopt an integrated approach towards policy implementation and resource management wherever possible.

## 2. Stakeholder Involvement in National Decision Making

The importance of stakeholder participation in the decision making, policy development and national planning processes is recognised and articulated as one of the core principles of Sustainable Development. This principle is best served by appropriate and enforced legislation and accountability and is advanced by the following recommendations:

2.1 The functioning of the National Commission on Sustainable Development will be bolstered with a clear legal mandate and institutional mechanism to facilitate its future roles as:

1. Monitoring body to oversee and evaluate the implementation of the National Sustainable Development Policy.
2. Ex officio member on all developmental and/or planning boards with authority over the use of natural and environmental resources, including but not limited to the BWA, BHTA, PPC etc.
3. Advisory body to Government on Sustainable Development issues or other issues with as yet unrecognised implications for Sustainable Development ("think tank").
4. Advisory body to national delegations to international and regional meetings addressing issues of Sustainable Development, or issues with implications for Sustainable Development.
5. "Endorser" of publications, projects or other initiatives which intend to promote Sustainable Development.
6. Publisher of documents evaluating in detail specific issues for concern in Barbados pertaining to Sustainable Development.



2.2 The recommendations of the National Commission on Sustainable Development will be considered with respect to decision making on national policy, projects, plans and activities related to Sustainable Development and the environment, with a view to ensuring a holistic approach to decision making within these areas;

2.3 Public participation will be facilitated and encouraged in all processes of national decision making, policy development and planning pertaining to natural resource utilisation specifically and Sustainable Development in general.

### 3. Fresh Water Resources

It is recognised that Barbados is a water scarce country and that committed work is necessary to ensure the sustainable management of this resource. Equitable allocation and ongoing monitoring of the fresh water resources of Barbados are necessary to ensure its optimal utilisation, conservation and protection.

Specific policy recommendations towards this end include:

3.1 Obtaining and analysing information and maintaining up-to-date records of the total available fresh water resources of Barbados;

3.2 Considering the establishment of a joint working agreement with the University of the West Indies (UWI) and/or any other appropriate institution, to facilitate the development and execution of an effective and comprehensive ground water research programme;

3.3 Establishment of a system whereby data related to water resources including rainfall collection, extraction, rainfall levels etc, is collected, collated and stored effectively. This information should then contribute to the development of future water use and management policies and programmes;

3.4 Phase out of the importation and use of devices that do not comply with international water conservation standards;

3.5 Conduct public education and awareness building programmes to inform about the importance of employing water conservation practices in daily life;

3.6 Continued support for the policy requiring new dwellings of a particular size to construct rain water catchment and storage tanks, including the possible revision of the policy to include existing dwellings and new dwellings of smaller sizes;

3.7 Establishment and implementation of appropriate pricing and financial concessions to encourage the above and other water conservation policies, and to render these policies economically attractive;

3.8 Continued work towards implementing an island wide metering programme supported by the introduction of an appropriate demand suppressant block tariff pricing structure of charges for water use;

3.9 Internalisation of external environmental costs of fresh water supply and utilisation into the cost of supplying the resource;

3.10 Internalisation of external social costs of fresh water supply and utilisation into the cost of supplying the resource, including the scarcity factor and the number of competing demands in Barbados;

3.11 Rationalisation of competing demands for water use in order to arrange them in an appropriate list bearing in mind the limited supplies available.

3.12 Maintaining human, financial and technical commitments towards ensuring a firm foundation for managing water use in a sustainable manner as well as for devising methods for augmenting the fresh water supply appropriately;

3.13 Development, implementation and enforcement of comprehensive and appropriate sustainable water resources management regulations and legislation;

3.14 Conducting research into the effects of the climate change phenomena including the specific effects on fresh water resources and the influence of expected rainfall reduction and increased evapo-transpiration due to temperature rise. This research will include an exploration of the most appropriate procedures to prepare for climate change and mitigate its adverse effects;

3.15 Exploring the feasibility of adopting, on an island-wide scale, the use of water-efficient technologies and practices. Consideration will be given to:

- Establishing the most appropriate pricing policies (rising block tariff structure) for water use;
- Introducing new technologies for industrial processes which allow recycling and use appliances and fixtures that meet international water conservation standards;
- Enhancing public awareness and educational campaigns to inform about the necessity and benefits of reducing water use.

3.16 Conducting an assessment of existing national expertise and knowledge available to address technical and socio-economic aspects of groundwater resources management. Any deficiencies identified will be remedied bearing in mind the resources available to the relevant national and regional agencies and institutions;

3.17 Under the West Coast Sewerage system the option of waste water treatment and reuse is to be fully explored to determine its feasibility in Barbados;

3.18 Reducing the percentage of unaccounted for water from leaks in the distribution system from an estimated 60% to 30% by the year 2016, via an integrated approach including:

- Leak detection and repair programme
- Review, monitoring and modification of the distribution system
- Assessment of total water consumption (public and private).

3.19 Revamping of the island's water resource management structure taking into consideration the findings and recommendations of the Water Resource Management and Water Loss Study;

3.20 A new national water policy shall be formulated if deemed appropriate from 3.19 above;

3.21 Separation of the regulatory and operational aspects of the Barbados Water Authority so as to eliminate the conflict of one agency being both supplier and regulator;

3.22 Conducting a cross-sectoral examination of policies which impact on fresh water resources in Barbados including, in particular, policies for tourism enhancement and agriculture;

3.23 Continuing to implement national programmes and activities which address Barbados' national obligations as Party to the United Nations Convention to Combat Desertification and drought.

## 4. Transportation

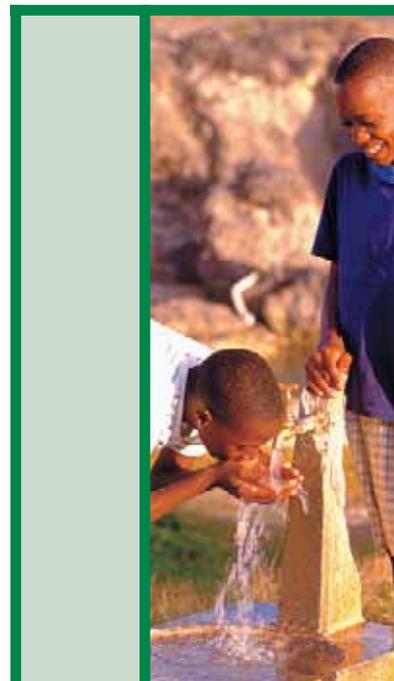
The National Sustainable Development Policy supports work to reduce environmental damage caused by various aspects of the transport sector. A major component of this thrust will be to improve the efficiency and reliability of the public transport sector so as to make this mode of transport attractive and acceptable for the majority of people in Barbados.

Policy recommendations towards this end include:

4.1 The environmental hazards of all the constituents of a blended fuel should be fully documented. Appropriate measures should also be taken to address occupational health and safety of workers handling these fuels.

4.2 Development of a Clean Air Policy which will define strategies and/or options for reducing the release of polluting vehicle emissions into the atmosphere and including possibly a "flexitime" approach for the use of heavy vehicles in particular;

4.3 Development of safe minimum standards for atmospheric pollutants, especially those from vehicle emissions, which are appropriate to Barbadian circumstances while meeting internationally accepted standards. These standards could be



informed in part by biological monitoring programmes to determine existing internal levels of pollutants and the variable distribution of these levels amongst members of the population;

4.4 Development of appropriate economic instruments/incentives, legislation and regulations towards ensuring the successful implementation of policy objectives and programmes developed to facilitate energy efficiency in the transport sector, and improved air quality in general;

4.5 Efficient and timely maintenance of heavy duty diesel vehicles especially those involved in public transport, cargo/load transport and construction;

4.6 Promoting energy efficiency in the transport sector including giving consideration to

the feasibility of using electric cars as well as inter alia Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG) and hydrogen-powered vehicles and ensuring the provision of facilities for efficient ongoing maintenance of these vehicles;

4.7 The development, introduction and use of appropriate scientific technologies and practices with a view to improving the efficiency of the transport sector and its sustainability, in particular with regards to maintaining a clean and safe environment;

4.8 Conducting of studies on mass transit options in high traffic areas;

4.9 Areas where hydrocarbons are stored can be classified as potential hazardous sites and should be taken into consideration when considering development activities.

## 5. Agriculture

Sustainable agriculture optimises the use of renewable, locally available resources and farming practices and ensures that sustainable farming technology is passed on to future generations for their continued benefit. In addition, it is envisaged that productive economic and environmental conditions with respect to the agricultural and food production sectors will be maintained into the future.

The overall policy objective is to pursue sustainable agriculture through the implementation of a strategy which preserves, conserves and sustainably uses the island's agricultural resources. Some considerations for ecological efficiency encompassed within the sustainable agriculture policy include:

- biodiversity preservation
- maintenance of water purity
- efficient and conservative water use
- conservation and improvement of chemical, physical and biological qualities of the soil
- energy conservation
- natural resource recycling and reuse where possible
- cultural appropriateness
- scientific inputs
- economic viability
- utilisation of local renewable resources
- minimisation of external and purchased inputs
- minimisation of synthetic pesticide and fertilizer inputs

- promotion of organic fertilizers
- research and development of appropriate biological pest control methods
- integrated crop management practices wherever possible

Specific policy objectives for sustainable agriculture include:

5.1 Formulating Barbados' agricultural policies via an integrated approach involving all concerned stakeholders and interest groups, with a view to ensuring sustainable domestic food production, food security and food safety;

5.2 With respect to food safety, the following recommendations are made:

- Develop national pesticide residual levels standards for food stuff both local and imported
- Develop national/regional capacity to monitor Maximum Residual Levels in food stuff , both local and imported and for food that is exported
- Develop national/regional capacity to screen genetically modified foods
- Adopt the Precautionary Principle as a policy with respect to genetically modified foods.

5.3 Carry out critical assessments of existing land use policies and legislation and amendment where necessary to ensure the sustainability of the agricultural sector;

5.4 Identify key areas of agricultural importance in Barbados with a view to optimising the use of limited biological resources which are suitable for agriculture;

5.5 Strengthening or development of mechanisms to assist small farmers in marketing and maintaining a constant supply of produce to hotels and the tourism sector in general;

5.6 Supporting farm and crop diversification as well as general production enhancement, through infrastructural developments and support such as:

- sustainable irrigation where necessary
- market facilities
- transport services for products
- education programmes on sustainable cultivation practices

5.7 Supporting and encouraging farmer training programmes which build awareness of sustainable cultivation practices;

5.8 Offering incentives, especially economic incentives, for sustainable agriculture production practices;

5.9 Promoting via suitable incentive schemes, the use of hydroponics to increase domestic agricultural production and self-sufficiency in food production to ensure efficient use of land by the agricultural sector;

5.10 Maintenance of networks to disseminate information on these practices to other farmers to encourage their adoption;

5.11 Strengthening national commitment of technical, financial and human resources towards agricultural research. This should include investigations into:

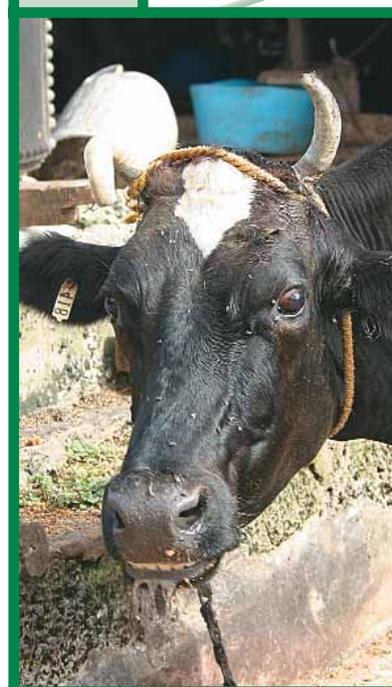
- opportunities and risks posed by bio-technology
- appropriate crop alternatives and possibilities for agricultural diversification
- alternative crops associated with less environmental "damage", for example water intensive species verses xerophytic species
- Best Management Practices for cultivation schemes
- presence and levels of chemical residuals and/or environmental contaminants in soils
- presence and levels of chemical residuals and/or environmental contaminants in food products which have been domestically produced and/or imported

5.12 Establishment of an effective and comprehensive data collection system and information dissemination service for the agricultural sector;

5.13 Within the sub-area of genetic resources for sustainable agriculture, the following recommendations are made (see also the section on biotechnology below):

5.13.1 Strengthening research into plant and animal genetic resources suitable for agricultural progress, including investigations into disease resistant strains of various crops, biological pest control agents, and alternative economically viable plants and animals;

5.13.2 Where appropriate, promoting crop diversification using cultivated strains of plants or animals which possess proven advantageous traits and no adverse effects on human health or the natural environment;



5.13.3 Dissemination of information on biotechnology and bio-safety among the agricultural sector as well as the general public;

5.13.4 Provision of training in the safe and Sustainable Development and use of plant or animal genetic resources for agriculture;

5.13.5 Development of programmes to preserve endangered populations of plants or animals which play a role in agriculture currently or may offer potential for future commercial development;

5.14 Within the sub-area of Integrated Pest Management (IPM) for sustainable agriculture, it is recommended that increased use be made of appropriate Integrated Pest Management practices and techniques to reduce chemical pesticide and fertilizer use in agriculture and to develop and introduce suitable biological controls for pest infestations.

Policy recommendations in support of Integrated Pest Management include:

5.14.1 Establishing programmes to monitor the incidence of crop diseases and pest infestations;

5.14.2 Recording in computerised form baseline information on the use of pesticides for crop maintenance in Barbados and the human and environmental side effects of their use;

5.14.3 Research into non-chemical pest management techniques which make use of pesticides that degrade to harmless substances and are suitable for use in Barbados;

5.14.4 Establishing programmes to control, via suitable IPM practices, the

incidence of crop diseases and pest infestations in Barbados;

5.14.5 Provision of education programmes on available and reliable options for pest management in agriculture which offer an alternative to chemical pesticides and support Integrated Pest Management techniques;

5.14.6 Reformulation of national policy to ensure the appropriate use and management of pesticides, especially those recognised as potentially harmful to human health or the natural environment;

5.15 With respect to energy conservation for sustainable agriculture, encouragement and support for the use of alternative renewable energy sources and improving the efficiency with which energy is utilised within the sector. Specific policy recommendations include:

5.15.1 Intensifying research into agricultural energy demands and options for improving the efficiency with which energy is used;

5.15.2 Development and use of alternative renewable energy sources and technologies suitable for integration into the agricultural sector in Barbados;

5.15.3 Execution of education programmes for farmers and other interest groups on the environmental and financial benefits of employing practices which maximise efficient energy use, or exploit renewable energy sources.

5.16 Wherever possible harness traditional knowledge within the industry with specific attention paid to sustainable technologies and practices.

## 6. Terrestrial Biodiversity Including Forestry

Sustainable use of terrestrial biodiversity is intended to ensure that such resources are enjoyed today as well as passed on to future generations for their benefit and enjoyment. The overall policy objective is to ensure sustainable use of terrestrial biodiversity in part through the implementation of a strategy which preserves, conserves and sustainably uses the island's terrestrial resources of flora and fauna.

This policy recommends:

6.1 Formulating Barbados' biodiversity conservation policies via an integrated approach which involves all concerned stakeholders and interest groups;

6.2 Making use of the findings of research studies already conducted and action plans for

biodiversity management already proposed with a view to formulating the optimal biodiversity conservation and management plan for Barbados;

6.3 Identifying key areas of ecological importance in Barbados with a view to focusing national conservation efforts on clearly defined areas and objectives;

6.4 Elaboration of appropriate sustainable management plans for ecosystems and/or species and areas of unique ecological value such as Turner's Hall Woods, Andromeda Botanical Gardens and Graeme Hall Swamp;

6.6 Pursuing the protection of biodiversity in Barbados through a combined legislative, public education and species-management approach;

6.7 Continuing to implement programmes and activities which comply with and address Barbados' national obligations as Party to the United Nations Convention on Biological Diversity, as well as the Convention for the Prevention of International Trade in Endangered Species of Flora and Fauna.

6.8 Preserve a minimum area of vegetative cover to prevent disruption of climatic patterns as well as reduce the potential economic and environmental impacts associated with soil erosion and change in rainfall patterns arising from drastic changes in natural areas and landscapes.

## 7. Fisheries

The Fisheries Division of the Ministry of Agriculture and Rural Development aims to ensure the optimum utilisation of the fisheries resources in the waters of Barbados for the benefit of the people of Barbados today and into the future. Specific policy objectives for sustainable fisheries management include:

7.1 Sustaining or increasing the potential of marine living resources to meet national human nutritional needs, as well as social and economic development goals;

7.2 Fostering the development of a sustainable fishing industry through, in part, an integrated approach to policy and decision-making concerning fisheries and coastal zone management;

7.3 Harnessing traditional knowledge within the industry with specific attention paid to sustainable technologies and practices;

7.4 Supporting the development, adoption and use of appropriate technologies within the fishing industry through information sharing and technology exchange initiatives with country partners in the Caribbean region as well as other small island states;

7.5 Ensuring that the economic interests of local communities are integrated in the development and management fisheries programmes;

7.6 Conducting periodic numerical assessments of commercial fish stocks to determine maximum sustainable yields based on historical, current and projected levels of exploitation, the relationships among species and between species and their environment, as well as all other relevant environmental, economic and social factors influencing fish harvests and the sustainability thereof;

7.7 Maintaining or restoring populations of marine species at levels that can sustainably produce maximum sustainable yields on a long term basis;

7.8 Promoting the development and use of selective fishing gear and practices that minimise waste in the catch of target species and minimise by-catch of non-target species;

7.9 Preserving rare or fragile ecosystems, ecologically-sensitive areas and endangered species, especially coral reefs, beaches, estuaries, mangroves, sea grass beds, spawning and nursery areas; and sea turtles;

7.10 Promoting scientific research and other programmes of cooperation with regional neighbours and the international community, for the sustainable management of shared, straddling and highly migratory fish stocks;



7.11 Supporting where appropriate freshwater fisheries, aquaculture and mariculture while ensuring that such operations are based on collaboration with relevant agencies and conducted in accordance with their technical guidelines;

7.12 Investigating the feasibility of using market-based economic instruments and incentives for promoting the sustainable management and use of commercial fish stocks in Barbados;

## 8. Energy

The sustainable energy policy for Barbados aims to assist Barbados in fulfilling its national obligations as party to the United Nations Framework Convention on Climate Change. In order to combat climate change induced global warming and the associated adverse repercussions, member states are required to reduce emissions of greenhouse gases. Barbados' primary greenhouse gas is carbon dioxide which is released from the combustion of fossil fuels such as oil and natural gas for electric power generation.

The sustainable energy policy recommends:

8.1 Determining and implementing appropriate economic instruments and incentives to promote energy conservation, efficient use, and where possible the switch to renewable energy alternatives;

8.2 Introduction of legislation supporting the development and use of alternative renewable energy sources, including:

- Fines and/or appropriate penalties for non-compliance with energy conservation standards
- Consumer protection with respect to electricity pricing
- Support for independent power producers
- Appliance labeling requirements

8.3 Articulation of standards for efficient energy use and performance of technologies;

8.4 Encouraging the large scale use of renewable energy sources through establishing guidelines to govern the contribution of renewable energy sources to domestic electric power

## 9. Biotechnology

This relatively new area in Barbados must progress in a safe and sustainable manner. The National Sustainable Development Policy recommends:

9.1 Development of a comprehensive national policy on the issues of biotechnology and biosafety, including:

7.13 Implementing the use of such instruments and incentives where they are shown to be potentially effective, accompanied by appropriate awareness building programmes for relevant stakeholders and the general public;

7.14 Continuing to implement programmes and activities which comply with and address Barbados' national obligations as party to various regional and international conventions and agreements related to sustaining global fisheries resources.

Such guidelines may include stipulations that:

- Electricity companies be required to purchase energy generated from renewable sources
- The major electricity supplier compensate for ebbs and flows in energy output from renewable sources during the development phase of these sources
- Electricity cost from renewable sources should exhibit long-term economic viability, even if initial Government subsidy during the implementation phase is necessary.
- Independent power producers should get access to the distribution system

8.5 Promoting research into the development of renewable energy technologies appropriate for use in Barbados;

8.6 Promoting and providing education and training opportunities in the renewable energy sector for postgraduate students as well as ongoing training for those employed in the sector, with a view to ensuring widespread adoption of renewable energy technologies;

8.7 Conducting public education and awareness building programmes about the use of renewable energy technologies;

8.8 Facilitating the involvement of all relevant stakeholders in promoting the use of renewable energy sources as well as in other related issues;

8.9 Cooperating in regional initiatives aimed at enhancing the development and use of renewable energy sources.

- Establishing a national position on the Biotechnology/Biosafety Protocol of the United Nations Convention on Biological Diversity;
- Developing specific guidelines and requirements for conducting bio-

prospecting operations in Barbados;

- Rationalisation of national copyright issues pertaining to bio-prospecting and the use of indigenous genetic resources.

9.2 Continued support for research into the national status of biodiversity resources in order to develop a comprehensive database/inventory of these resources;

9.3 Articulation of management plans for all species especially those which are unique, exotic or of particular value for use in biotechnology related programmes;

9.4 Encouraging and supporting biotechnology and biosafety-related research and development including allocating appropriate human, technical and financial resources to this field of study;

9.5 Initiating and/or strengthening programmes to collect germ plasm in gene banks for the use in bio-technology research and development initiatives;

9.6 Ensuring the security of state, community and individual property rights with regards to genetic resources found in Barbados and products developed therefrom.

## 10. Research & Development

The potential benefit offered for by the promotion of Sustainable Development in many sectors through research and development within those sectors, is recognised. Research and development in a wide range of relevant disciplines is recognised as critical for encouraging the evolution of renewable resources, sustainable manufacturing processes, waste management, and so on. Policy recommendations within this context include:

10.1 Supporting existing research programmes related to Sustainable Development and environmental issues, as well as initiating and pursuing new and innovative programmes as appropriate;

10.2 Encouraging research and development of environmental management practices and/or "clean technologies" that are appropriate for introduction to the industrial, manufacturing and/or any other sector in Barbados;

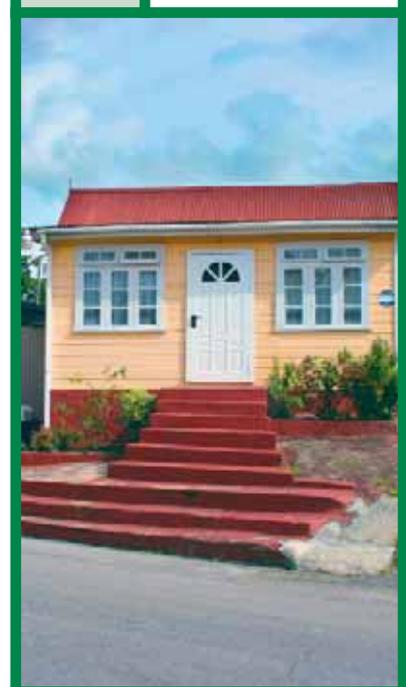
10.3 Compiling and maintaining a comprehensive databases of information on research studies and their findings related to the field of Sustainable Development, especially those with a specific angle towards small island developing states. Such a database should be:

- Accessible by Internet
- Updatable by information submitters
- Searchable by users
- Downloadable
- Linked to other relevant web sites
- Varied in content

10.4 Encourage the dissemination of information to disadvantaged groups in particular.

## 11. The Built Environment

The National Sustainable Development Policy aims to ensure that the built environment in Barbados, that is all structures and



surfaces that are man-made, are manufactured, constructed, and/or erected, in a sustainable manner. The policy therefore aims to safeguard individuals from risk or danger associated with the utilisation of those structures and surfaces, as well as their continued existence in a desirable and functional state as long as possible. To this end, policy recommendations include:

### **Building Code**

- 11.1 Full adoption and implementation of an agreed Barbados National Building Code;
- 11.2 Establishing, introducing and enforcing appropriate legislation and regulations to support the implementation of the Barbados National Building Code;
- 11.3 Developing appropriate and effective institutional and administrative structures to support the building code;
- 11.4 Conducting awareness building and education programmes targeted at pertinent interest groups and the general public to inform about the importance of adopting basic sustainable construction practices and code requirements, as well as about the specific code requirements themselves;
- 11.5 Encouraging the insurance sector to promote sustainable building practices possibly by offering lower premiums or special deals for

## **12. Land Resources**

Policy recommendations for sustainable land use span many sectors. Reference should be made to other sections within this policy paper including but not limited to transport, the built environment, waste management, agriculture, biodiversity, coastal and marine resources, and fresh water resources. Policy recommendations towards achieving sustainable land use include:

- 12.1 Continued maintenance by the Town and Country Development Planning Office of a computerised Geographic Information System (GIS) land use database for Barbados;
- 12.2 Use of the GIS land use database to facilitate the coordination, collection, storage and sharing of land use information with governmental agencies and other interest groups;
- 12.3 Use of the GIS land use database for national development planning, review of planning/development applications, and general decision and policy-making with regards to sustainable land use;
- 12.4 Ensuring that such data as defined above is available for use by interested individuals including in particular contractors, architects and engineers, so that they too are in a position to promote sustainable land use

appropriately constructed buildings as well as those that have been refurbished with consideration for the Barbados National Building Code;

### **Materials and Design**

- 11.6 Encouraging interest groups to manufacture materials via sustainable processes, using materials that are themselves sustainable. For example, composite boards like chipboard and medium density fibreboard contain resin which deters termites and in some cases may be a useful alternative to plywood;
- 11.7 Encourage the integration of cultural considerations and influences into building design and project developments with particular reference to the use of indigenous construction materials and encouraging the promotion of a unique island-wide Barbadian appearance to the built environment e.g. chattel house features;
- 11.8 Investigating options for building materials and design which reduce energy demand, for example, from lighting and air conditioning;

### **Roads And Traffic Flow**

- 11.9 Including sidewalks, access for the disabled and cycle paths wherever possible in plans for new roads and road upgrades. (See also Section 4 on Transport).

programmes;

- 12.5 Integrating concerns for sustainability into the establishment of future national land use plans and policies (especially the Physical Development Plan) and amending or enacting relevant legislation so that the Physical Development Plan becomes legally binding by all parties including the crown;
- 12.6 Any changes to the Physical Development Plan (PDP) after the Development Application approval process should be transparent with clearly stated reasons when decisions are in conflict with the guidelines in the PDP. The PDP should be amended to reflect any changes in land use.
- 12.7 Application by the Town and Country Development Planning Office of the requirement that an Environmental Impact Assessment be conducted and submitted to an Environmental Committee for consideration prior to deciding on approval or denial for certain applications to that office;
- 12.8 Approving land use plans and developments based on the requirement that the development does not adversely effect the environment or inhibit national Sustainable Development;

12.9 Researching options available for more efficient utilisation of limited land space, including a possible revision of current building height restrictions;

12.10 Designating areas where hazardous chemicals are used, as hazardous sites, particularly if the land use is to be changed.

### 13. Natural Resources

This section refers in general to any aspect of Barbados' natural resource endowment. More detailed policy recommendations regarding terrestrial biodiversity, fisheries, coastal and marine resources, as well as land resources, may be found in sections dedicated to those topics. It is recommended that:

13.1 Detailed investigations be conducted to determine the potential carrying capacity of Barbados' terrestrial and marine ecosystems with a view to assessing their ability to continue functioning as sources of resources and services for use by the present and future generations;

13.2 Information generated from the above be used to articulate the potential for continued use of Barbados' natural resources and services along "Business as Usual" scenarios, as well as changes in use practices that are necessary to ensure the sustainability of Barbados' natural resources and services.

### 14. Education & Training

Recognising that education policies have facilitated Barbados' development to date, it is strongly recommended that these policies be preserved, improved upon and passed on.

The National Sustainable Development Policy supports the sustainable evolution of the formal education sector in Barbados. Other appropriate forms of education also have an immense part to play in knowledge sharing and information dissemination and these initiatives are welcomed in order to affect attitudinal change. It is noted that recommendations of the National Sustainable Development Policy in general, and pertaining specifically to education, are intended to target the general public as well as specific target groups wherever appropriate. Within this context it is recommended that:

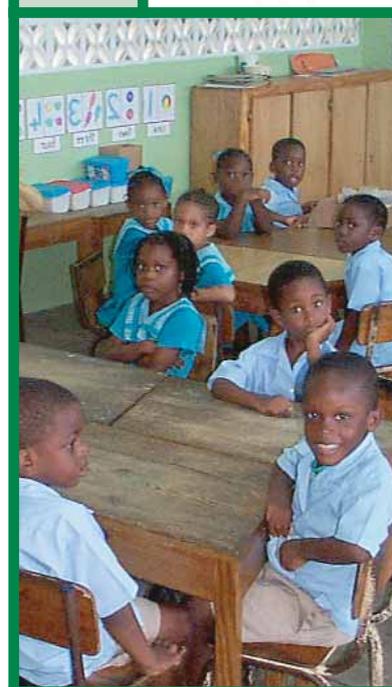
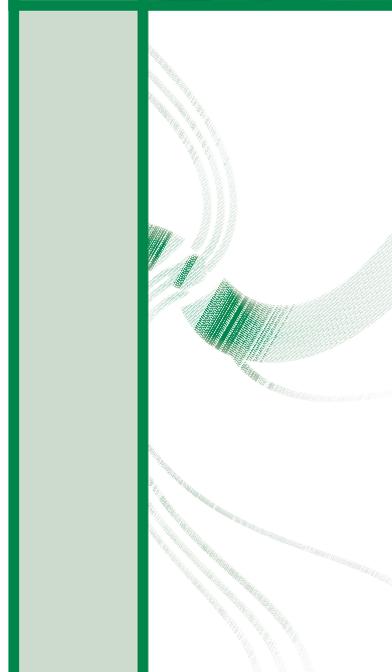
14.1 Awareness building and educational programmes be executed to provide information on Sustainable Development and specific environmental issues that are of particular concern to Barbados;

14.2 The involvement of individuals and interest groups in activities which focus on environmental conservation and Sustainable Development is be encouraged;

14.3 Information be gathered and disseminated to the private sector on options available for implementing Environmental Management Systems for daily practices and operation, with a view ultimately to encouraging the voluntary adoption of a private sector led Sustainable Development programme;

14.4 Promote information and education in the areas of environmental health and safety programmes in keeping with accepted environmental standards;

14.5 Various groups involved in education and awareness building programmes with relevance to Sustainable Development, cooperate so as to ensure comprehensive coverage of important issues, efficient dissemination of information, and to avoid duplication of responsibilities.



## 15. Waste Management

The recommendations of the National Sustainable Development Policy pertaining to waste management address the issues of solid and liquid waste, as well as air emissions. In general, it is recommended that waste generation, emission disposal and management standards which are appropriate in the Barbadian context, be developed as part of comprehensive environmental quality guidelines to be complied with by all individuals, sectors, industries etc, as appropriate. More specific policy recommendations include:

### Air Emissions

15.1 Establishing monitoring programmes to measure air quality both indoors and at low-level atmospheric levels;

15.2 Developing standards to ensure maintenance of appropriate air quality levels which protect human health and meet at least minimum international standards;

15.3 Establishing guidelines and procedural requirements to guide the management of sectors that impact on air quality, e.g. transport, in order to ensure minimisation, and if possible elimination, of adverse environmental and health effects from poor air quality;

15.4 Continuing to implement programmes and activities which comply with and address Barbados' national obligations as Party to relevant international Environmental Agreements such as the Vienna Convention on the Ozone Layer and the associated Montreal Protocol on the Phase Out of Ozone Depleting Substances.

### Solid Waste Management

15.5 Continuing the development, implementation and execution of an appropriate comprehensive and efficient solid waste management programme for Barbados, including elements such as the comprehensive public awareness and education programme developed and being implemented by the Sewerage and Solid Waste Project Unit and which the Commission fully endorses.

15.6 Continuing efforts towards introducing and adopting the various recommendations of

the Integrated Solid Waste Management Plan;

15.7 Encouraging the involvement of private sector enterprises and other stakeholders in sustainable waste management initiatives;

15.8 Initiating appropriate mechanisms and procedures to support small-scale, sustainable waste management practices, including recycling and backyard composting where possible, and re-education of farmers in the techniques of organic farming;

15.9 Completion of the various projects for sewerage treatment and management, including the South Coast Sewage Project, the planned west coast facility, as well as the upgrade of the Bridgetown plant;

15.10 Continuing to implement programmes and activities which comply with and address Barbados' national obligations as Party to various International Environmental Agreements which seek to eliminate marine pollution from the disposal of ship generated waste, including but not limited to the Convention on the Prevention of Marine Pollution from Ship Generated Waste (MARPOL73/78).

### Hazardous Waste

15.11 Development of a comprehensive policy to guide the management of hazardous materials including chemicals for agriculture and/or manufacturing, as well as wastes;

15.12 Including in the policy, mechanisms and procedures for the importation, handling, transport, storage and disposal of hazardous wastes in accordance with Barbados' obligations as Party to the Basel Convention;

15.13 Development of appropriate legislative measures to support the implementation of policy recommendations;

15.14 Investigating incidents of groundwater contamination by the disposal and/or accidental release of liquid and solid hazardous substances, with a view to devising mitigative measures to minimise future incidents of pollution.

## 16. Regional Cooperation

Cooperation in initiatives in the region to promote Sustainable Development is recognised as a pivotal component in the achievement of this goal at any level, from national to global. Aspects of the regional cooperation policy would include:

16.1 Assisting in and pursuing as appropriate the further articulation and detailing of the resolution to designate the Caribbean Sea as a

Special Area in the Context of Sustainable Development;

16.2 Developing procedures and codes of practice to facilitate the establishment of joint regional positions regarding new international environmental agreements (or amendments to existing agreements), with a view to ensuring that Small Island Developing States (SIDS) specific concerns are considered at negotiating

fora;

16.3 Agreeing on joint regional representation at international fora wherever possible so as to ensure that optimal use is made of limited regional skills and expertise;

16.4 Coordinating regional enforcement procedures and mechanisms for compliance with international environmental laws and regulations, especially those pertaining to the protection and sustainable management of the Caribbean Sea and its resources;

16.5 Coordinating wherever possible region-wide recycling efforts for non-bio-degradable waste so as to achieve economies of scale in the production of recycled commodities.

16.6 Cognizant of the fact that many problems affect the entire region and collaboration between nations is necessary, the Commission encourages and supports transparency in enforcement of procedures and mechanisms dealing with communicable diseases and pests (eg. the pink mealy bug) that have to be addressed on a regional front.

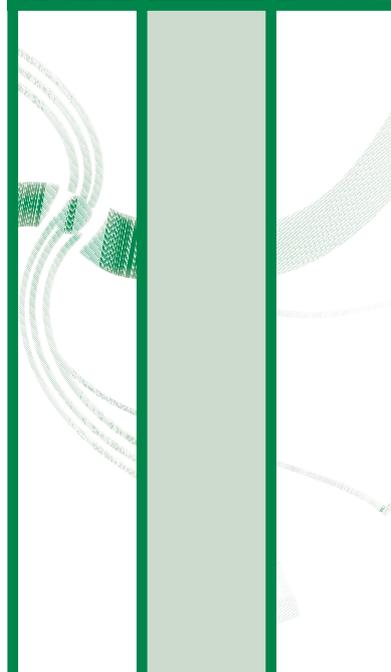
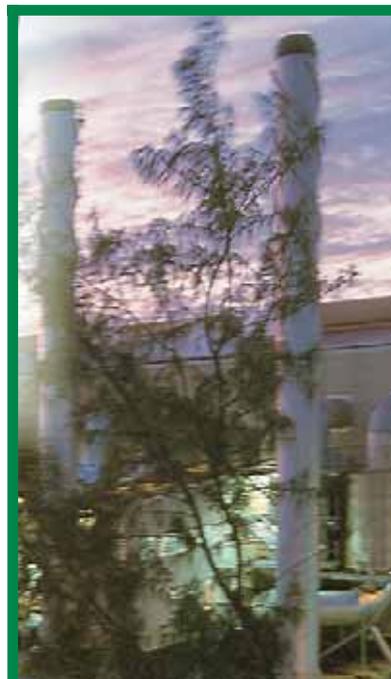
16.7 Government awareness of the problems related to transfer of exotic species and possible detrimental environmental consequence. Attention should be paid to intra-regional movement of equipment, soil, wood and quarrying materials (e.g. sand and limestone).

## 17. Concessions & Incentives

It is recognised that the achievement of Sustainable Development in many cases is facilitated and encouraged through the use of various and appropriate financial and economic instruments and incentives. An example of this in Barbados is the existing policy on the provision of BDS \$3,500 tax rebate for the installation of domestic solar water heaters.

The foremost recommendation made to encourage the use of economic incentives and instruments for Sustainable Development and management of natural resources is that a comprehensive assessment of such mechanisms be conducted to determine those appropriate for use in Barbados. This analysis should reveal:

- A. The feasibility of offering tax-back incentives to encourage various environmentally friendly and/or sustainable practices including:
  - Installation of water saving devices;
  - Installation of energy conserving equipment and fixtures;
- B. Appropriate incentives to encourage:
  - Adoption of appropriate waste disposal practices;
  - Implementation of voluntary programmes by the industrial and business sectors, including meeting environmental standards and establishment of Environmental Management Systems.
  - Manufacturers who produce/utilise equipment operating on clean energy.
- C. The possibility of providing duty free concessions for imports of:
  - Equipment/machinery which utilise 'clean' fuels, for example compressed natural gas



- Goods or equipment for recycling processes
- Recycled goods and/or "green" products
- Goods with minimal packaging material
- Equipment/products which utilise clean energy

The assessment report and the associated recommendations are to be discussed by the National Commission on Sustainable Development and the relevant Government Ministry for further refining, public review, Cabinet approval and implementation.

## 18. Human Health, Well-Being & Poverty

The National Sustainable Development Policy recognises that human resources are critical to national development. Individuals must be educated and encouraged to be productive for the successful pursuit of Sustainable Development. Within this context the National Sustainable Development Policy is based on the key principles of equity, quality of life and participation, which all seek to ensure adequate, appropriate and sustained development of the country's human resources.

The following are recommended:

18.1 Support for and strengthening of community efforts towards self-reliance and self-development;

18.2 Continued commitment of financial, human and other resources to caring for vulnerable social groups including the elderly, mentally challenged, disabled, poor, homeless and abused. Programmes initiated towards this objective may include:

- Establishment or strengthening of community outreach programmes and centres;
- Joint initiatives between Government, Non Governmental Organisations (NGO) and the private sector;
- Community level programmes specifically targeting young males;
- Reproductive health programmes targeting specific groups.

18.3 Continuing and supporting the execution of Government's programmes for poverty eradication and the provision of adequate shelter for all persons;

18.4 Execution of programmes by relevant agencies and organisations, with the support of other concerned stakeholders, to raise awareness among the general public and specific target groups of socially regressive problems and options for avoiding and/or combating them. Problems to be included in such programmes include:

- Drug abuse
- Sexual promiscuity and the spread of sexually transmitted infections

- Domestic violence
- Gender and race discrimination
- Alcohol and tobacco dependency

18.5 Addressing the issues of population growth through the articulation of a definitive national policy for the achievement of a sustainable demographic structure for Barbados.

It is recognised that within the broad group of those living below the poverty line some, especially women, children and the elderly, are more vulnerable than others. Recognising the role played by agencies such as the Ministry of Social Transformation, the Urban Development Commission, Rural Development Commission and the Youth Entrepreneurship Scheme in reducing poverty and empowering communities, it is recommended that in the context of Sustainable Development, an effective poverty mechanism should encompass demographic issues, rights of women, the role of youth and local communities in conjunction with the continued promotion of economic growth and the strengthening of employment and income generating programmes. The Commission therefore endorses:

18.6 The further empowerment of the poor through protection of their civil rights, policy reforms, and actions to allow them access to basic amenities including *inter alia* food, shelter and reliable transport.

18.7 The continued collaboration between government and NGOs in the development of social safety nets to prevent persons from falling into destitution.

18.8 The formation of partnerships between Government, other organisations and international groups to support a community - driven approach to sustainability.

18.9 Seeking, where appropriate, to recognise and integrate informal sector activities into the economy by removing regulations and hindrances that discriminate against activities in those sectors.

The Commission further encourages that poverty eradication be a core priority of national economic policy.

## 19. Gender

Recognising that Sustainable Development requires the full involvement and integration of all persons into the development process; and recognising that all forms of gender-based discrimination must be eliminated, the Commission recommends:

19.1 Development of a broad gender perspective at all levels of education;

19.2 The development of curricula in gender studies for all teachers;

19.3 The harmonisation of legal reforms geared towards eliminating gender discrimination;

19.4 The formulation and implementation of clear governmental policies and national guidelines, strategies and plans for the achievement of equality in all aspects of society, including the promotion of literacy, education and training; nutrition and health;

19.5 Implementation of a gender perspective in all governmental policy planning.

## 20. Population

The ability of any country to achieve Sustainable Development depends largely on the patterns of social, economic and related behaviour of its population. Several population or demographic variables impact on Sustainable Development and these include fertility, mortality, population growth, migration, population redistribution and urbanisation. The age and gender composition of the population together with the patterns of social and economic development, production patterns and consumption practices and preferences also impact on the achievement of Sustainable Development.

In Barbados, the main issues include the lack of a clearly defined national population policy and the need to sustain current levels of population growth.

Population related issues include gender and equity, population aging and demographic transition (i.e. declining fertility and mortality, stagnant population growth, increasing urbanisation, life expectancy and population aging; etc.). There is also the issue of the high incidence and prevalence of HIV/AIDS, which has the potential to adversely impact on the country's population, in particular, the labour force. The National Commission on Sustainable Development recommends:

20.1 Establishment of a national institution with the mandate for population issues.

20.2 Formulation, development and implementation of a national population policy to set directions for, and clearly define, the country's population goals and objectives.

20.3 Development of strategies and mechanisms to ensure the adequate inclusion of population variables in the formulation, development and delivery of policies and social programmes.

20.4 Strengthening institutions such as the Ministries of Health, Housing and Social Transformation to enable them to deal adequately with issues associated with population aging (geriatric services in housing, health, recreation etc.).

20.5 Encouraging public and private sector agencies to consider gender issues in planning, development and delivery of programs and



policies.

20.6 The improvement of strategies to ensure the sustainability of current levels of fertility, mortality and population growth by providing requisite resources to agencies such as the Barbados Family Planning Association, the Ministry of Health and relevant NGOs to address issues related to fertility, family planning and sexual and reproductive health.

20.7 Development of strategies to ensure the provision of adequate amenities to meet the needs of growing population centres including food, housing, transportation, energy, water and sewerage, waste management, recreation, telecommunications and other urban infrastructure.

## 21. Disaster Management

The National Sustainable Development Policy recognises the importance of preparing as far as possible for and mitigating against the adverse repercussions of man-made and natural disasters. The following recommendations are made:

21.1 Support for programmes of the Central Emergency Relief Organization and strengthening of that agency's risk assessment, disaster mitigation, management and emergency response capacity;

21.2 Establishment of temporary emergency shelters and coordinated community programmes to deal appropriately with disaster and/or emergency situations;

21.3 Minimise loss of life by having adequate disaster evacuation plans;

20.8 Encouraging and strengthening the appropriate ministry to develop and implement appropriate land use policies and practices, reduce undesired environmental practices, and educate Barbadians about positive practices.

20.9 Strengthening the national statistical organization, Barbados Statistical Service, to enable it to collect, compile, analyze and present accurate, complete, reliable, disaggregated and timely demographic data for planning, policy and program development.

20.10 Strengthening, funding and encouraging demographic training and research and in particular research on the complex issues involved in population and the environment.

21.4 Conduct of post-disaster assessments of environmental consequences and implementation of procedures and programmes to address pertinent issues;

21.5 Consideration of the implications of natural and man-made disasters in the appraisal of planning development applications, and any Environmental Impact Assessment Reports associated with such applications;

21.6 Assessment of vulnerability to particular natural disasters to be carried out. The risk assessment approach to land-use management is encouraged as well as greater awareness of the hazardous index .

Reference should also be made to Section 11 of this paper addressing the issue of the "Built Environment".

## 22. Coastal & Marine Preservation

The National Sustainable Development Policy supports the work of the Coastal Zone Management Unit (CZMU) in promoting the sustainable management of the island's coastal and marine resources in order to retain their vital and pivotal role in the economic, social and physical development of Barbados.

Specific policy objectives for sustainable management of coastal and marine resources include:

22.1 Improving control of the development process within the island's coastal zone;

22.2 Providing for maintenance and/or rehabilitation of coastal environments and their resources;

22.3 Identifying coastal reaches which may benefit from structural and non-structural protection or enhancement;

22.4 Providing water quality objectives for

coastal waters that will be used to evaluate and control discharges, and to develop remedial action plans;

22.5 Providing measurement and monitoring of key parameters of the coastal area for environmental and human health;

22.6 Offering an improved opportunity for education and training on coastal management amongst Government and coastal user groups;

22.7 Providing increased public education and sensitisation to all sectors of society on the importance and proper use of the coast and the factors affecting coastal integrity;

22.8 Adapting and implementing recommendations from the ongoing study being executed by the Coastal Zone Management Unit;

22.9 Completing the construction of the coastal sewerage treatment facilities, commencing the analogous project for the west

coast and the upgrade of the Bridgetown facility, in order to eliminate point sources of pollution along the island's coastline;

22.10 Compliance with international conventions and instruments aimed at general ocean preservation;

22.11 Cooperation with other Caribbean Governments through the CARICOM Sustainable Development Programme towards further pursuing the designation of the Caribbean Sea as a Special Area within the Context of Sustainable Development;

22.12 Designating specific marine areas for protection and preservation. These areas need to be shown on the official maps of Barbados.

## 23. Consumption Patterns

The National Sustainable Development Policy requires the development of a comprehensive eco-labeling procedure and mechanism for consumer goods so as to allow the average consumer to be a more active participant in the pursuit of Sustainable Development. The Commission encourages sustainable consumption patterns, through public education.

## 24. Implementaion & Legislation

The stated objectives of the National Sustainable Development Policy will be supported and facilitated through the articulation of appropriate and enforceable legislation and regulations. Within this context, the following policy recommendations are included:

24.1 Evaluating from a national perspective, the issue of property rights as it relates to environmental matters (including natural resource conservation, biotechnology and biosafety, emission reduction, pollution, etc);

24.2 Determining appropriate liability regulations (strict liability versus negligence), for Barbados while considering different environmental circumstances/situations;

24.3 Determining most appropriate procedures and mechanisms for effectively enforcing policy and legislated requirements;

24.4 Endorsing the "Polluter Pays Principle" as a pivotal component of the foundation of Barbados' National Sustainable Development Policy;

24.5 Reviewing, considering and amending as appropriate the legislative recommendations governing the environment;

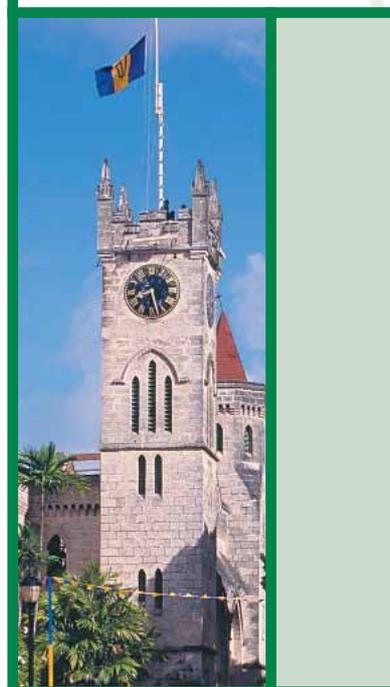
24.6 Designing, reviewing and amending appropriately legislative instruments, liability rules, penalties and compensation requirements for pollution prevention and sound environmental management.

24.7 Enacting agreed legislation for environmental management and Sustainable Development in the shortest possible time frame;

24.8 Execution of public awareness programmes to inform of requirements relating to new or amended legislation and regulations for environmental management and Sustainable Development;

24.9 Providing personnel training opportunities to:

- Improve the capability of existing attorneys to deal with matters pertaining to environmental law;
- Equip enforcement personnel with knowledge of new



legislation, requirements etc, and their enforcement responsibilities; and

- Strengthen the Environmental Law component of the University of the West Indies Law Programme;

24.10 Supporting programmes to develop standards for various environmental concerns e.g. waste disposal, emission levels, etc., which would form part of national regulations and legislation.

## 25. Indicators for Sustainable Development

The National Policy for Sustainable Development supports fully the development and use of appropriate indicators to demonstrate the country's progress along the road of sustainability and, more specifically, to monitor and evaluate the implementation of policy recommendations articulated within this document. Within this context it is recommended that:

25.1 Consideration be given to the findings and recommendations of the Indicators Steering Committee of the National Commission on Sustainable Development.

25.2 Review of the indicators work be conducted from an integrated perspective so as to ensure that consideration is given to the Steering Committee recommendations by a wide cross-section of interest groups;

25.3 Some procedure be put in place to allow amendment or augmentation of the agreed list of core indicators for Sustainable Development, so that this can be updated appropriately as national and/or international circumstances change.

## 26. Sustainable Tourism Development

The National Commission on Sustainable Development recognises that the tourism industry is Barbados' "major economic engine" and that many thousands of employment opportunities are provided, and livelihoods supported, by that industry. It also notes that Barbados' tourism industry has not traditionally evolved along a sustainable path. Major and urgent transformations away from the "business as usual" mode of operation are critical if this country is to experience positive social and economic progress into the future through tourism.

Concerns for environmental conservation and preservation are integral considerations in this sustainable tourism policy by virtue of the fact that Barbados' natural and environmental resources and services have always dominated our tourism product, and are expected to continue to do so. Having said this, the Commission acknowledges the efforts of the Ministry of Tourism to prevent or reduce the adverse impacts on our environment through the adoption of new legislation and tourism policy. Within this context it is recommended that:

26.1 A critical and comprehensive assessment of Barbados' tourism industry be conducted with a view to determining its potential viability into the future (i.e. carrying capacity) under various developmental scenarios including:

- "Business as usual"

- More conservative use of natural resources
- Voluntary environmental management
- Regulated environmental management
- Economic incentives and instruments to promote environmental compliance

26.2 Marketing programmes promoting Barbados as a tourism destination stress this country's efforts to promote sustainable national development and to contribute to global sustainable initiatives;

26.3 Visitors to the island are encouraged via appropriate means to comply with voluntary or regulated environmental management efforts;

26.4 All those involved in the tourism sector be required to implement environmental management programmes for their individual operation;

26.5 Conduct for the general public in Barbados, including those involved in the industry, awareness programmes that stress the importance of developing sustainable projects which focus on the tourism product in Barbados;

26.6 Appropriate support be offered to stakeholders attempting to pursue tourism-related initiatives which are socially, economically and environmentally sustainable.

## 27. Conclusions

The National Sustainable Development Policy is intended to provide an integrated and holistic

representation of Barbados' goals with regard to Sustainable Development, and to articulate

specific recommendations for policy within a range of sectors, all aimed at fostering national Sustainable Development.

This list of specific policy recommendations has been compiled via a wide consultative process with the intention of encompassing the great range of concerns which impinge upon Sustainable Development. It is evident that the issues of which Sustainable Development is constituted are many and varied and this list should not be considered to be exhaustive. Rather, the recommendations are intended to offer some initial guidance to those involved in specific sectors or fields and, in particular, those involved in making decisions about how those sectors and fields progress into the future.

The National Sustainable Development Policy is intended to function as an essential tool for every policy and decision-maker in Barbados. It is expected that those persons in whose hands this country's future lies will use the policy document as an aide in their daily decision-making process. Overarching principles and concepts which form the foundation of Sustainable Development for any sector are articulated in Part A of the policy document.





# ANNEX 1: CONTRIBUTORS TO THE NATIONAL SUSTAINABLE DEVELOPMENT POLICY AND ACTION PLAN

## NATIONAL COMMISSION ON SUSTAINABLE DEVELOPMENT

### CABINET APPOINTED 2000

Professor The Honourable Oliver Headley, Director, Centre for Resource Management and Environmental Studies (CERMES), University of the West Indies, Chairman  
Director of Research and Planning, Ministry of Finance and Economic Affairs, Deputy Chairman

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Ms. Undine Whittaker/Mr. Orlando Scott, Coalition of Trade Unions and Staff Associates (CTUSAB)

Mr. Andy Taitt, Small Business Association

Ms. Esther Marshall, nominee of Chief Town Planner

Mr. Richard Carter, Director of Youth Affairs

Mr. Nigel Jones, Nominee of Chief Agricultural Officer

Dr. Colin Hudson, Technologist

Chief Community Development Officer or nominee

Mrs. Gwendah Alleyne, nominee of Permanent Secretary, Ministry of Social Transformation

Mr. Gordon Bispham, Barbados Association of Non Governmental Organisations (BANGO)

Ms. Jacqueline Banfield, National Organisation of Women

Rev. Errol Connor/Kes Amha Selassie Yaicob, Barbados Christian Council

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### STEERING COMMITTEE 1

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Mr. Carson Browne, Development Planner/Mr. Barry Headley, Ministry of finance and Economic Affairs

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Mr. Wendell Burnett, Chief Environmental Assistant, Environmental Engineering Division  
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Mr. W. Levine, Barbados Industrial Development Corporation  
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National Commission on Sustainable Development  
Ministry of Housing, Lands and the Environment  
Government of Barbados

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