

Antigua and Barbuda

Second National Report to the UN CCD



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Acronyms

APUA-	Antigua Public Utilities Authority
CTAP-	Canadian Training Awards Project
COP-	Convention of the Parties
CRIC-	Committee for the Review and Implementation of the Convention
GARD-	Gilberts Agricultural and Rural Development (Centre)
GDP-	Gross Domestic Product
GEF-	Global Environmental Facility
MCCA-	Methodist Church of Caribbean and the Americas
MEA-	Multilateral Environmental Agreement
NAP-	National Action Plan
NCM-	National Coordinating Mechanism
NGO-	Non Governmental Organization
NODS-	National Office of Disaster Services
NPDP-	National Physical Development Plan
NSDP-	National Sustainable Development Plan
OAS-	Organization Of American States
OAS/USDE-	Organization Of American States Unit For Sustainable Development
OECS-	Organization For Eastern Caribbean States
PGDM-	Post Georges Disaster Mitigation
SIDS-	Small Islands Developing States
UK-	United Kingdom
UN CBD-	United Nations Convention On Biological Diversity
UNCCD-	United Nations Convention To Combat Desertification
UNFCCC-	United Nations Framework Convention on Climate Change
USA-	United States Of America
USAID-	United States Agency for International Development

Executive Summary

In October 2001, the UN CCD convened for the Conference of the Parties 5 (COP5). Decision 1/COP. 5 established the creation of the committee for the review of the implementation of the convention (CRIC) and as such all parties of the convention are required to formulate updated national reports to be submitted for the first meeting of the CRIC. This document is therefore an expression in compliance of decision 1/COP. 5. At the national level, this document serves as a benchmark, signifying the national progress in combating desertification.

Antigua and Barbuda became a party to the UN CCD in June 6th 1997 (signed October 14th 1994). It is a twin island state located in the eastern arc of the Leeward Islands between Guadeloupe and Saint Martin. Antigua is situated at latitude 17° 10' N by 61° 55' W and the island of Barbuda is found 28 miles north of Antigua at 17° 35' N by 61° 48' W.

Antigua is roughly round in shape and occupies a land area of 280 sq. km. (108 sq. miles) while Barbuda is approximately two thirds this size, occupying 160 sq. km. (62 sq. miles). In the 2001 national census it was determined that Antigua has a population of 74,302 people where as Barbuda is home to some 1,439 contributing to an overall population of 75,741¹.

Priority Issues

In the initial communication to the UN CCD two priority issues were identified, drought and land management. In review, it has been deemed necessary to increase the scope of the priority issues to include coastal degradation as an urgent issue. Although coastal degradation falls within the broader confines of land management recent occurrences have catapulted it up the list of national priorities. As a party to the UN CCD, UN CBD, UNFCCC, and as a Small Island Developing State (SIDS), no development plan originating out of Antigua and Barbuda would be complete without consideration for the impacts and influences of coastal zones.

Drought

Although there has been significant research into the assessment of drought episodes, which have affected Antigua and Barbuda, the primary indicator is still quoted as occasions when there has been a total annual rainfall of less than 32.50 inches (825.50 mm) annually. This means that when compared to the national average of 40.74 inches (1034.80 mm) a drought year is deemed to be one when the annual rainfall is less than 80% of the national average.

¹ Antigua and Barbuda Preliminary Census Report 2001 (2001)
St. John's, Antigua

In a recent drought hazard assessment, a more graduated scale of drought levels was offered for internalization. This assessment gave stronger consideration to the varying intensities of drought episodes ranging them from slight (95% of annual average) to extreme (>70 % of annual average).² Although this intensity-based indicator provides a much clearer perception of drought episodes there is still the inherent problem of only being able to officially declare a drought at the end of the year. It also means that on occasion Antigua and Barbuda can have an inordinately low rainfall recorded during the first six months of the year and then due tropical storm activity in the latter six months record annual precipitation in excess of the national average. It is therefore necessary that the indicators be developed to identify drought episodes from as early as three months.

Specific drought indicators are not solely meant for measuring a country's vulnerability. Indicators can also prove to be a valuable asset to policy makers with the development of an early warning and monitoring system. Indicators will permit the identification of drought episodes before it becomes a national crisis and allow for effecting response planning both in specific sectors and through out the nation as a whole.

Also of note is that Antigua and Barbuda has a high vulnerability to hurricanes and tropical storms. With mechanisms almost in direct contrast to that of drought episodes these meteorological disturbances are well know for their potential damage to the socio-economic structure of the nation. However the when compared to the hurricanes few people recognize that droughts although different are equally damaging. More significantly, the effects of storms become magnified when they occur after a prolonged period of drought. With little vegetation cover, the land is susceptible to erosion, being water logged and mass movement not to mention further devastation of existing stands of vegetation.

Land Use Management

Having recently conducted the national census land management issues have become a more prominent matter in national plans and policies. In the first national communication to the UN CCD, land management issues focused on:

- Unsustainable horticultural practices
- Poor watershed management
- Uncontrolled livestock grazing
- Soil and sand mining

In recognition to the social interests of the UN CCD, attention must be given to the use of land and competing land interests. To better elucidate this point reference must be made to the population figures showing that two of the nation's eight parish populations have grown by approximately 40% since 1991³. This means assuming constant growth these

² Drought Hazard Assessment and Mapping: Antigua and Barbuda (2001) Prepared for the OAS by Ivor Jackson, Ivor Jackson & Associates, Environmental & Land Use Planning and Landscape Architecture

³ Antigua & Barbuda Preliminary Census Report 2001 (2001) Department of Statistics, Antigua and Barbuda

parish populations will double in size every twenty years. If this projection is realized impacts will include such issues as:

- Possible zoning of development activities
- Sufficient agricultural land to support local population
- Provision of water to meet national demand
- Productivity of the agricultural sector

Since 2000, the Ministry of Agriculture and the Environment Division (Ministry of Tourism and Environment) have reinstated the national Arbor Day celebrations. Not only is this an activity focused on the reforestation and urban beautification of Antigua and Barbuda but it also encourages nationals to consciously participate in increasing the national food security, and become aware of numerous issues related to the goals of the UN CCD. Key among these is soil conservation and productivity, and food security.

Coastal Degradation

As stated earlier, Antigua and Barbuda is a SIDS and as such, matters of coastal degradation do not only affect the dynamic interface along the waterfront. Coastal influences have an impact zone that not only encompasses the total land mass as an entity in itself but also affects every sector of society and economy.

Also of note is the fact that Antigua and Barbuda has identified its primary industry as the tourism and related services. Contributing to an estimated 72% of the national GDP, tourism is heavily dependent on the coasts for its sustenance. To further illustrate, one need only consider that a vast majority of the hotels and resort are located within a one mile radius of the coast. Prior to the drive for sustainable development, tourism projects could be approved with little regard for the dynamic stability of the coastal landscape. The ultimate consequence was the degradation of that coastal ecosystem leaving the land, officially recognized as being out of the shoreline, defenseless against the sea and frequent storms.

Sand mining has established itself as a most disturbing issue in national development policies. Under present legislation, sand mining should not occur without documented approval from the Ministry of Public Works, Development Control Authority and Cabinet. Furthermore, the Director of Public Works has stated on numerous occasions that no permission has been given for at least ten years, however this has not deterred illegal sand mining.

The effects of sand mining are of particular concern to the national implementation of the goals of the UN CCD, particularly when considering the Barbuda example illustrated in the initial national communication. A 20-year heritage of sand mining at Palmetto point Barbuda has resulted in a crater 7 meters deep that has damaged the island's freshwater aquifers.

National Strategies

Over the past ten years, there has been considerable development in coordination, compilation and expression of national strategies, which reflect the sectoral objectives of the UN CCD. Numerous stakeholders have utilized the opportunity provided by the interest and commitment, which Antigua and Barbuda has shown to sustainable development and desertification issues. Foremost of these strategies are those of the National Physical Development Plan, Agriculture Sector Plan, and the Integrating Management of Watersheds & Coastal Areas in Small Island Developing States of the Caribbean; National Report.

Institutional Measures for Implementation

To formalize efforts in the implementation of the convention Antigua and Barbuda has developed a two-pronged approach. This consists firstly of a National Coordinating Mechanism which not only determines the national policies and priorities in implementation but also functions as a synergistic mechanism for the UN CCD and other conventions. The second aspect of the approach is a network of three primary focal points; national, political and operational. The interaction among these focal points will ensure that the implementation and awareness occurs at all levels and in multiple sectors.

National Participation

National participation is facilitated primarily through the NCM, which comprises of all stakeholders who are thusly provided with the opportunity to guide the national process of implementation. Furthermore, there are numerous initiatives undertaken by the various focal points to attain a more broad-based view of desertification activities and policies.

Consultation with External Agencies

Assistance from developed country and regional/international agencies in addressing desertification issues has most commonly been received as part of regional projects, which have not stated desertification as the priority issue to be addressed. However, these projects provide pertinent information regarding key issues such as drought, flooding and erosion. There have also been a number of national projects addressing land degradation/management issues.

Present Implementation

In accordance with the implementation goals identified in the first national report, Antigua and Barbuda has made impressive strides in the realization of its public awareness goals and significant achievements in two other implementation goals needs assessment and project development and implementation.

Financial Allocations

Similar to those issues communicated in the initial report to the UN CCD, financial mechanisms are intimately linked to the mandated responsibilities of the various agencies and as such it would be difficult to identify the operating total budget for combating desertification. However, it can be extrapolated, budgetary commitments for those activities that in execution seek to fulfill Antigua and Barbuda's obligations to the UN CCD. Through this process it was determined that Antigua and Barbuda has allocated some EC \$1.4 million (approximately US \$500,000.00) of its national budget toward addressing desertification related issues.

Benchmarks and Indicators

Although there has been no concerted effort to develop a nationally accepted suite of benchmarks and indicators specific to the fulfillment of the obligations stipulated as a party of the UN CCD, there has been development of various indicators through research and development of projects in related fields. However in recognition of this Antigua and Barbuda, along with other parties in the Caribbean Sub-Region, has requested of the secretariat to convene a special meeting towards the development of benchmarks and indicators at national and sub-regional scales.

1. National Strategies

Over the last ten years the Government of Antigua and Barbuda with the assistance of non-governmental stakeholders has developed numerous documents expressing the national strategies for sustainable development. As a party to the UN CCD these documents have each in its own way addressed issues of land degradation, land management and drought. These plans encompass a cross-section of disciplines, sectors and priority issues, a testament of the relationship between desertification and all sectors of the society.

Antigua and Barbuda's Commitment to the Convention to Combat Desertification

The first concerted effort to address issues, trends, policies and practices purely from a desertification standpoint. The benefit of this exercise was development of the ability in stakeholders to identify those issues directly related to land degradation and drought. Other benefits of this document include the identification of priority issues not only for national action but also to allow external agencies to better understand and appreciate the national situation.

The initial communication besides providing an outline of the national situation further sought to give an insight into proposed future actions to arrest desertification impacts. This features such themes as:

- Public Awareness
- Inventory of Current Practices and Status of Interests/Needs, Resources and Expertise
- Programme Development and Identification;
 - Rehabilitation of Land and Water Resources;
 - Creation of a Facilitative Legislative Environment;
 - Building of Institutional Framework for Combating and Mitigation; and
 - Budgeting and Fundraising for Combating and Mitigation

National Physical Development Plan

In reference to land management, Antigua and Barbuda is no different to any other country of the world. Planners and policy makers have to find a balance among competing land uses while trying to appease public opinions and ensuring sustainability of land usage. The NPDP is a comprehensive land use plan concerned not only with present distribution and future allocation of land but also the social and economic factors which drive how land is used.

The NPDP has identified the following critical areas (which relate to desertification):

- Destruction of natural coastal sub-systems to facilitate construction;
- Poor positioning of structures along the coast;
- Indiscriminate sand mining for construction;
- Degradation of land/vegetation and erosion;

- Depletion of fish stocks due to over-fishing and destruction of terrestrial fish habitats;
- Pollution due to improper disposal of garbage, sewage, industrial effluent and agricultural chemicals;
- Encroachment of built developments onto agricultural land;
- Ad hoc and uncontrolled development.

To address the issues identified through the various consultations held in the development of the NPDP the resulting strategy was designed to be area specific; based on the characteristics of potential developments; position in the national settlement hierarchy; population size; population growth estimates; and the logistics of existing physical and social infrastructures.

Foremost among the strategy activities is the zoning of lands for agriculture, development of settlement hierarchy and decentralization of the capital city St. John's to facilitate rural development, and conservation and management of water and coastal resources.

Agriculture Sector Plan 2001-2005 & National Sustainable Development Plan

Titled Food Security, Natural Resources and Rural Development in Antigua and Barbuda, the agriculture sector plan investigates into the performance of the sector, the level of institutional support provided by the government, financial mechanisms developed to assist farmers, existing and potential markets, sustainable use of natural resources rural development and technical and information support available to farmers. This plan was initiated as part of the development of the National Sustainable Development Plan. The NSDP is still incomplete at this time, since several of the sector plans have yet to be submitted.

The title of the document stresses the overall national priority, food security. It has been a long stated rule of development that if a country cannot feed itself it will be forever constrained. Antigua and Barbuda recognizes that to achieve a sufficient level of sustainability there needs to be a significant improvement in agricultural productivity and quality. According to 1999 records, US \$61.12M was spent on the importation of agricultural products (55% more than in 1991). In the converse the local agricultural production only provides US\$21.79M (approximately 1/3 the value of the agricultural imports⁴).

Although the previously mentioned statistics appears disparaging, it must be pointed out that a significant portion of those foods imported cannot be cultivated successfully in Antigua and Barbuda. Furthermore, the emphasis on these temperate latitude products is pronounced due to the primary industry and foreign exchange earner, tourism.

The performance and potential of the agricultural sector is not only limited by the dictates of the market. In a 1960's survey to identify good quality soils for arable usage it was

⁴ Food Security, Natural Resources and Rural Development in Antigua and Barbuda: Agriculture Sector Plan 2001-2005 (2001) Ministry of Agriculture, Antigua and Barbuda

determined that some 27,000 acres of land could be classified as Class II and III. However since that time an estimated 50% of those lands have been utilized for housing and other built up developments.

The plan outlines strategies for:

- Land management, use and development;
- Water and watershed management, use and development;
- Fisheries resources management, use and development;
- Biodiversity resources exploitation and conservation;
- Rural development

Some of the specific activities described in this document, which will in effect assist in combating desertification are:

- The reassessment of Antigua and Barbuda's soils;
- The establishing of a sound policy and management guidelines for topsoil and ghaut and coastal sand mining;
- The strengthening and improvement of mechanisms dealing with land preparation, particularly as it relates to soil and water conservation; and
- The integration of watershed and coastal areas management

In the spirit of the UN CCD priorities, the agriculture sector plan does not attempt to solve degradation problems with purely scientific concepts. The plan recognizes and addresses the various social and economic aspects, which can influence the probability of success of any initiative.

Integrating Management of Watersheds & Coastal Areas in Small Island Developing States of the Caribbean: National Report

The concept behind the above titled document/project has been alluded to earlier; it is functionally inadequate to consider land degradation issues as a purely terrestrial matter with no appreciation for the coastal influences and impacts. The land mass and the coasts of SIDS are inextricably linked and to produce a plan for the management of one without consideration for the other is to construct a fatally flawed policy.

This document also provides a strong interpretation on the heritage of degradation found within Antigua and Barbuda as a result of the past colonial system of sugar cultivation. This refers to such events as the complete deforestation of Antigua and over a century of monoculture, which included such damaging practices as burning field both as a mechanism of initial clearing and as part of the harvesting activity. Further resultant of the heritage of degradation is the evident vegetation regression. Unlike other forested areas found within the Caribbean sub-region, Antigua and Barbuda's natural vegetation cover has regressed from the dense tropical stands to groves of acacia and acres of grass savannas. Another expected result of this heritage is the poor soil quality in many areas.

As stated in the title, the document does not only present a detailed account of the present and past negative trends affecting the watersheds and coastal areas. The primary purpose

of the report was to present the various management opportunities for both areas. As such the document identified:

1. Improving management of water resources
2. Improving management of watersheds
3. Improving management of coastal areas.

Due to the all-encompassing nature of this document it shall remain a vital aspect of national strategy and policy development for years to come.

National Environmental Management Strategy

Although only a draft document at this time Antigua and Barbuda has already committed itself to the basic principles contained therein. The NEMS is part of an OECS initiative, an initiative to which the government has already adopted the framework document, The St. Georges Declaration of Principles for Environmental Sustainability. This document identifies 21 principles towards the accomplishment of that goal.

- Better quality of life for all;
- Integrated development planning;
- More effective laws and institutions;
- Civil society participation in decision-making;
- Meaningful participation of the private sector;
- Economic opportunities from environmental management;
- Broad-based environmental education and awareness;
- Preparation for climate change;
- Integrated disaster management;
- Preventing air, water and land pollution;
- Using available resources wisely;
- Protecting cultural and natural heritage;
- Protecting plant and animal species;
- Sensible and sustainable trade;
- Cooperation in science and technology;
- Using energy efficiently;
- Joint decision-making on international environmental agreements;
- Coordinated work with the international community;
- Putting the principles to work;
- Obligations of Member States;
- Review and updating of principles.

The above-stated principles originated from two principal entities; firstly, the SIDS plan of action and secondly, an intense consultation campaign. Consultations were conducted in each OECS member state at national, sub-regional and sector levels. As a signatory to the St. Georges Declaration, Antigua and Barbuda is mandated to develop and establish a national environmental strategy based on the OECS model. Upon completion and implementation of the NEMS, Antigua and Barbuda will be inadvertently addressing

many of the concerns identified by the UN CCD. In recognition of the limited resources available within Antigua and Barbuda and the high probability of duplication in the elaboration of national action plans for the various environmental conventions, the resulting National Environmental Management Strategy will serve as a detailed and complete document addressing the all environmental and sustainable development conventions as well as all national strategies, policies and laws.

Reports to related conventions

Antigua and Barbuda is party to a number of MEA's, of particular importance to the UN CCD is the level of commitment and implementation that Antigua and Barbuda imparts upon the UNFCCC and UN CBD. In operation, these conventions have a significant relationship to the operation implementation efforts of the UN CCD. This includes the rehabilitation and protection of important ecological areas and the increase of effective environmental sustainability and sustainable development efforts. To this extent, a number of reports have been developed in relation to biodiversity and climate change. These reports along with related projects have all played an important role in providing information and action in the development and implementation of the UN CCD in Antigua and Barbuda.

2. Institutional Measures for Implementation

Due to limited human and financial resources available within Antigua and Barbuda, institutional mechanisms to facilitate combating desertification and drought have been developed and established in synergistic fashion. There are two forms of synergies involved in the implementation of the MEA's. Firstly, there is synergy with the present government structure of work and secondly, the synergy with implementation initiatives with other MEA's. This better addresses the nation's status as a small island developing state. By utilizing an integrated approach incidents of miscommunication and conflict between agencies and legislations are significantly reduced.

Legislation

Considering that the goal of this report was to identify actions and mechanisms established with the purpose of integrating national policies with convention obligations and also considering that a review of existing legislation relevant to the convention was presented in the initial national report this section will only highlight recent legislative developments. However a list of existing legislation has been provided in Annex 2. At present there are two pieces of legislation which find a balance between national policies and the priority issues of combating desertification. Along with the NPDP, the Development Control Authority has submitted draft legislation to update existing development policies and practices. The Environment Division has initiated a legal review with the sole purpose of developing an umbrella-legislation which will facilitate the entry into force of all environmental and sustainable development conventions to which Antigua and Barbuda has become party and will become party. It should also be recognized that the APUA, a statutory body, is legally responsible for the management of all freshwater resources with in Antigua and Barbuda.

NPDP legislation

As a former colony of Britain, Antigua and Barbuda has inherited a number of statutes, which are primarily worded from the UK situation (or in some cases that of other commonwealth states). As such it has been necessary to develop legislation which appreciates the local situation. To be more specific this legislation addresses matters of environmental impact assessments for large developments and developments in sensitive areas, general building codes and special codes for coastal and near special habitat developments and the zoning of land (particularly those areas of significant potential for agriculture). This draft legislation also makes provisions for comprehensive development planning.

Umbrella environmental legislation

Titled the Environment Management Act this draft legislation focuses on two primary themes, effective management of natural resources and the provision of a legal mechanism to facilitate the implementation of the various Multilateral Environmental Agreements to which Antigua and Barbuda has signed and will sign in the future. As part of the process involved in the preparation of this draft legislation a comprehensive review of all existing legislation featuring environment and sustainable development issues was

conducted hence ensuring the ability of this proposed statute to link with and strengthen the existing legislative frameworks.

Infrastructure

The implementation of the UN CCD and all other conventions must be adapted and integrated into the national system. A key result of this process is that there is no specified mention of desertification initiatives in the project lines of the affected government agencies. However upon inspection, activities which in effect combat desertification and drought are both easily identifiable and synthesized with required initiatives relating to the implementation of other multilateral environmental (and sustainable development) agreements.

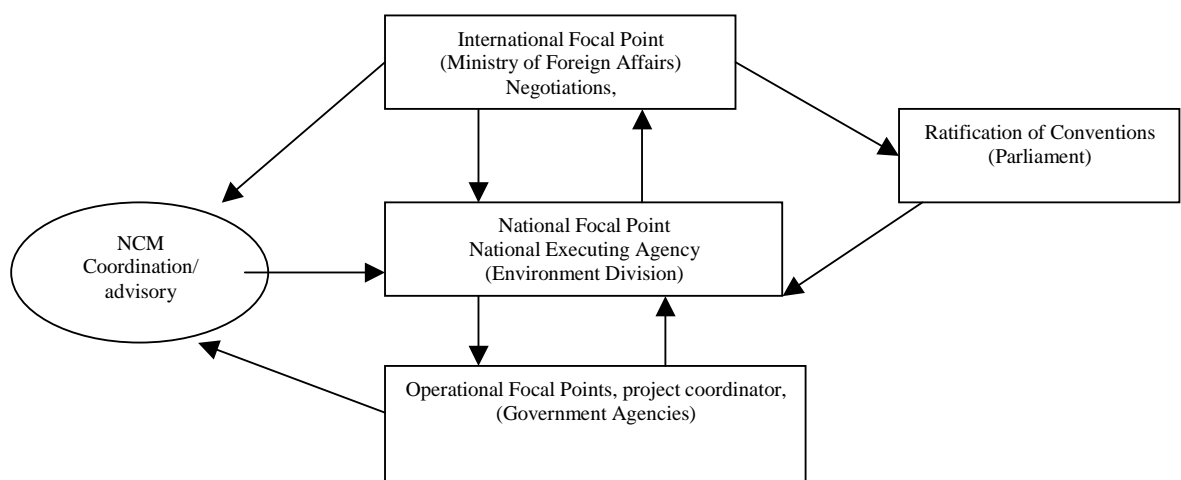


Figure 2.1: Institutional Arrangements For Implementation of MEAs

Source: National Coordinating Mechanism Seventh Meeting (2002) Implementation of Multilateral Environmental Agreements Paper No: NCM-7/Info/01

Figure 2.1 illustrates the institutional organization of Antigua and Barbuda in the implementation of multilateral environmental agreements. In terms of the UN CCD, the national focal point is the Environment Division; the political focal point, the Ministry of Foreign Affairs; and the operational focal point, the Ministry of Agriculture, Lands and Fisheries. As the operational focal point, the Ministry of Agriculture, Lands and Fisheries is mandated with the implementation of activities of the convention. To achieve this there are four divisions in the ministry which execute activities; the Agriculture Division, Soil and Water Conservation Unit, Forestry Division and Fisheries Division.

Also of important note is the NCM. This body functions as advisory council for the implementation of environmental agreements. All issues concerning MEA's must be presented to the NCM for review. The NCM is comprised of all government agencies and NGO's involved in the implementation of MEA's. This body meets three times a year and reports its discussions and recommendations directly to the Cabinet of Antigua

and Barbuda thereby ensuring the involvement of policy makers in the implementation of the UN CCD.

3. National Participation

Participation and implementation of those principles involved in the combating of desertification and drought occurs on two platforms within Antigua and Barbuda. Firstly, there are intense broad-based campaigns twice a year. Secondly, there are a number of initiatives with specific contact groups throughout the year.

Broad-based Campaigns

The Ministry of Agriculture, Lands and Fisheries and the Environment Division, in the Ministry of Tourism and Environment, are the key government agencies responsible for the coordination and the implementation of those issues related to the combating of desertification in Antigua and Barbuda. Through the work of these two agencies, the months of June and November have been designated as apexes of the public awareness campaigns. The Environment Division leads the campaign in June, and the Ministry of Agriculture leads government initiative in November. In June, the UN has declared two key special calendar days, World Environment Day and World Day for Combating Desertification. November has been declared as Arbor Month for Antigua and Barbuda.

The concentration of government campaigns and initiatives in these two months has been specifically designed to reflect the synergistic policies of Antigua and Barbuda while recognizing the limited resources available in the country. Furthermore, the government uses different forms of participation on both occasions. In June, the participation is linked to information dissemination. Agencies have utilized various modes of communication to transfer the awareness message. Of particular success in this venture is the agencies use of culture to encourage participation and expand awareness. In November, participation is based on a more applied usage. The general public is encouraged to openly and directly become involved in national activities to combat desertification. The success of the November campaign is based on the general theme that together all sectors of society no matter their financial and infrastructural resources and limitations can make a difference in the fight to combat desertification and attain sustainable development.

Other Government Initiatives

Due to the multiplicity of issues addressed by the UN CCD, which have been found to affect sustainable livelihoods in Antigua and Barbuda, throughout the year there are initiatives specifically designed to provide consultation and possible solutions to small but significantly interested groups. These include meetings and workshops to address specific concerns with land use, land management, degraded ecosystems, ghaut sand mining, coastal sand mining, agricultural productivity and fresh water distribution.

Of particular note was the discussion which took place at the National Seminar on Soil and Water Conservation and Use Issues. In this public forum participants were quick to point out that portable water had a distribution biased toward municipal (domestic) water usage. In those times when the water supply was unreliable farmers were not guaranteed

sufficient water at any juncture. The local agency with legal responsibility for the management of freshwater resources, the APUA although having developed an expansive distribution network, has been unable to establish fair and effective protocols in allocating portable water to the various sectors.

Gilberts Agricultural and Rural Development Centre

Of notable mention, is an initiative which started in 1989 as a two year pilot project sponsored jointly between MCCA and CTAP and has now developed into a full time training center. Its major focus is providing opportunities to youth and unemployed women. This initiative has been titled the GARD Centre. With a wide range of courses/projects GARD Centre has gained international recognition and praise for its successes in the fields of agricultural development, gender relations and rural development.

Environmental Awareness Group

The EAG has focused its desertification combating strategy through the Ministry of Education. This being accomplished in two ways; firstly, the EAG has been a primary advocate for the inclusion of environmental issues in the education curricula in primary and secondary schools. Secondly, the group has instituted with the co-operation of the Forestry Division, a schools forestry project to help youths learn how to assist in the rehabilitation of degraded land.

4. Consultation with External Agencies

The contribution by developed country parties towards implementation of the UN CCD in Antigua and Barbuda has been limited to assistance in the synergistic process. Due to international understanding of desertification issues Antigua and Barbuda like other SIDS, has had to seek developed party assistance through indirect desertification-related projects and initiatives. Further limits to the consultation are the result, of the stated definition of the UN CCD. Through the use of the term desertification many seem unable to recognize the meaning is not limited to desert-forming or desert-expanding occurrences. The direct reference to Africa (although necessary) has cast an unintended illusion that the problems associated with the desertification are limited solely to African countries.

Post Georges Disaster Mitigation Programme

On September 20-22, 1998, Antigua and Barbuda was extensively damaged by Hurricane Georges, a category 3 hurricane; as a result the USAID and the OAS (to be specific the OAS/USDE) provided assistance in the development of a National Hazard Mitigation Policy and Plan. As a result of this activity significant research was initiated on the themes of drought, flood, inland erosion and coastal erosion hazards. Each theme is rudimentary to the appreciation of land degradation, which is appreciated as vehicles of desertification. One of the fundamental features in the research was the development of vulnerability maps (see Annex 1). The individual studies conducted on each theme comprised not only of vulnerability in tropical storm episodes but also an assessment of the situation under average conditions.

Northwest Coast Project

In recognition of the importance in combating coastal degradation the government of Antigua and Barbuda has sought the assistance of USA for the evaluation of the natural resources and development of a management plan for the Northwest coast area against further degradation. The Northwest coast area is of both ecological and economic importance. Firstly, it is the site of one of the countries largest wetland areas and is also one of the three primary tourist zones. Financial and technical assistance is being provided by USAID.

As can be seen in Fig. 4.1 the effects of coastal erosion on land usage and its economic potential are quite significant. Under these conditions the land is under constant stress, dwellings and other anthropogenic structures which were once several meters away from the shore are now under constant attack by the sea.



Figure 4.1: Pictures from Northwest Coast of Antigua demonstrating coastal erosion.
Source: Environment Division Database

The Northwest Coast project does not only address issues of coastal erosion. One of the other key components of the project is its focus on the highly degraded mangrove swamp/salt pond. The salt pond was once supported by a considerable mangrove community, which has been damaged significantly by the dumping of sewage, oil and the construction of a road which completely blocked the natural water courses.



Figure 4.2: Picture of Runaway Bay identifying degradation of northern coast
Source: Environment Division Database

In fig. 4.2 one can identify both the shoreline and wetland degradation issues affecting the Northwest coast of Antigua. Of significant concern is the level of evident deposition

occurring in the McKinnons Salt Pond. This deposition has been a result of surface runoff from nearby farms.

5. Present Implementation

In the first national report to the UN CCD Antigua and Barbuda identified three stages for the NAP.

1. Public Awareness
2. Inventory of Current Practices, and Status of Interests/Needs, Resources and Expertise
3. Programme Development and Project Identification.

Public Awareness

To date the focal points have instituted an intense broad-based awareness programme, which appreciates the limitations of the human, financial and infrastructural resources. The programmes are designed to be more interactive than simply informative and has been successful in public awareness of the issue.



Figure 5.1: Honourable Prime Minister Lester Bird Opening Arbor Month 2001
Source: Environment Division Database

Of particular note in the public awareness process are the various reforestation programmes being carried out with and in the schools of Antigua and Barbuda. The Environment Division, Forestry Division and EAG have all developed urban and reforestation projects that are carried out in various schools. The effectiveness of these

projects has been acknowledged and greeted with tremendous support and approval by the general public.

Inventory of Current Practices, and State of Interest/Needs, Resources and Expertise

In the assessment process involved in stage two, considerable achievements have made as a result of the PGDM, NSDP, NPDP and the Integrating Management of Watersheds & Coastal Areas in Small Island Developing States of the Caribbean: National Report. These four projects were designed not only for the development of reports but also carried significant consultation and assessment. Although stage two is still incomplete the achievements to date must be regarded as a qualitative success. As a result of the aforementioned projects the Government of Antigua and Barbuda can confirm the assessment of the themes as listed in table 5.1.

Project Title	Assessment Issues
Post Georges Disaster Mitigation	<ul style="list-style-type: none"> • Vulnerability of areas to drought, flood, erosion and combined hazards
National Sustainable Development Plan	<ul style="list-style-type: none"> • Assessment of agriculture and other sectors
National Physical Development Plan	<ul style="list-style-type: none"> • Assessment of land usage • Assessment of water resources • Assessment of water distribution and usage
Integrating Management of Watersheds and Coastal Areas	<ul style="list-style-type: none"> • Assessment of fresh water resources • Assessment of vegetation resources • Assessment of possibilities for combined terrestrial and coastal ecosystems management

Table 5.1 Achievement of Inventory Goals for National Action Plan

Programme Development and Project Identification

Stage three at this juncture is still in the planning phase. However in terms of reversing coastal damage/degradation as a result of hurricanes and erosion, development and local area plans are being developed for specific areas regarded as being of high social/ economic/ ecological vulnerability. There have also been significant commitments to examining and addressing possible weaknesses in the present legislation.

6. Financial Allocations

As identified in the initial national report, the financial mechanisms operating in Antigua and Barbuda mirror the general mandates of the various ministries and divisions. As a result there is no specified budgetary item line for desertification. However based on the commitments made to the UN CCD a considerable estimate can be extrapolated from budget estimates. Table 6.1 identifies the ministries and agencies which have budget items which facilitate in the combating desertification process.

Ministry/ Division	Budget Subhead Activity	Budget Estimate 2001 (US\$)
<i>Ministry of Agriculture, Land and Fisheries</i>		
Agriculture Division	➤ Conservation Management	77,957
	➤ Forestry Inventory Management	44,946
Fisheries Division	➤ Coastal Biodiversity Management	40,631
	➤ Statistical Data Collection and Analysis	7,290
<i>Ministry of Public Works, Communications, Insurance and St. John's Development</i>		
Development Control Authority	➤ Building Regulations Enforcement	137,358
<i>Ministry of Tourism and Environment</i>		
Environment Division	➤ Coastal Zone Management	136,044
	➤ Environmental Legislation & Monitoring	17,336
	➤ Public Awareness	31,485
	➤ Statistical Data Collection and Analysis	35,125
TOTAL		528,199

Table 6.1: 2001 Budget allocation for desertification related activities.

Source: Antigua and Barbuda Recurrent and Development Estimates 2001 (2001) Ministry of Finance

The caution expressed in the initial communication must be reiterated for consideration of the information provided in table 6.1. These figures are not only operational costs; they are reflective of all aspects involved in the implementation of desertification related activities. A sizable portion of the total is allocated to salaries.

The agencies identified in the table are not the only agencies interested in desertification issues; however they are the agencies which have mobilized resources to actively combat desertification within Antigua and Barbuda. Other agencies whose mandates impact on national policies towards desertification include NODS, APUA, and the Meteorological Office.

7. Benchmarks and Indicators

In a world of myriad benchmarks and indicators Antigua and Barbuda has yet to determine those to be considered its standard. Recognizing that these references should reflect both the global as well as the local consensus the task remains formidable. However in the lack of consensus, there has been development in a database of indicators from which the most effective compliment can be determined.

Drought Indicators

As part of the Post Georges Disaster Mitigation Project a drought assessment was done on Antigua and Barbuda⁵. The results of that assessment are as follows:

1. Environmental Indicators
 - a. Reduction in biomass production of common grass species.
 - b. Leaf fall and litter in forests.
 - c. Damage to “indicator” plant species.
2. Hydrological Indicators
 - a. Reduction of ground water levels.
 - b. Reduction of water levels at municipal reservoirs.
 - c. Water rationing by statutory authority.
 - d. Reduction of water levels at agricultural reservoirs.
3. Agricultural Indicators
 - a. Livestock - weight loss, increased vulnerability to disease and high incidence of miscarriage.
 - b. Crops – negative water balance evident by wilting and ultimately death, high incidence of decease.
4. Socio-economic Indicators
 - a. Increased usage of existing and temporary water storage facilities due to rationing.
 - b. Reduction of water usage for landscaping and gardening.
 - c. Trucking water to counteract the deficit.
 - d. Higher incidents of respiratory ailments.

To date there is only one officially recognized indicator concerning the identification of a drought episode. This is through the comparison of average annual rainfall with that of any other year. This method although empirical in nature does carry a number of limitations. Firstly, this method can only be used at the end of a year of sub-average rainfall and therefore is retrospective. Secondly, the method only recognizes drought on a yearly scale and as such tropical storm episodes, which can provide intense rainfall over

⁵ Jackson, I. (2001) Drought Hazard Assessment and Mapping: Antigua and Barbuda Prepared for the OAS Ivor Jackson, Ivor Jackson & Associates, Environmental & Land Use Planning and Landscape Architecture

a small time frame, cause a year with otherwise sub-average rainfall to be classified as not experiencing a drought. Finally, there should be a means of identifying small scale droughts which may have occurred only for the space of a few months.

<i>Category Drought</i>	<i>Rainfall (inches)</i>	<i>% of Ave. Annual Rainfall</i>
Slight	38.93	95
Mild	36.88	90
Moderate	32.78	85
Moderate Severe	30.74	80
Severe	28.69	75
Extreme	24.50	70

Table 7.1: Categories of Drought Using Average Rainfall of 40.98 Annually
 Source: Jackson, I. (2001) *Drought Hazard Assessment and Mapping: Antigua and Barbuda*

In addition to these measurements droughts can also be classified into meteorological, agricultural and hydrological droughts. Regarded as progressive stages in droughts, meteorological drought occurs when the rainfall is less than 80% of the average total annual. In an agricultural drought the plants begin responding to unreplenished soil moisture by the loss of biomass. In the final stage there is significant reduction in surface water and animals, particularly livestock, begin to exhibit the impacts of drought.

Based on the these three stages it should be considered as an option to farmers in the event that sufficient water cannot be provided to maintain agricultural holdings to reduce the size of active holdings accordingly to ensure the survival of a significant proportion. For example in the onset of a drought and the effects of the second stage are evident farmers should consider reducing crops by 10 – 25% in an effort to prolong water resources and maintain crop quality. In the same manner when surface water resources begin to show signs of eminent depletion there should be consideration to reduce livestock populations.

Conclusions/ Recommendations

Although a significant portion of the national commitments identified in the first national report submitted in 2000 have been completed or are presently in effect, there still remains a formidable task ahead in combating desertification in Antigua and Barbuda. Desertification is not simply a topic of concern; it is a disaster, a natural, man-made and extraordinary hazard that affects organisms, habitats, human beings, societies, nations, regions, climate and the world as a whole. Although there are no deserts to be found in Antigua and Barbuda the broad scope of desertification has left evident marks and barriers in the nation's development.

- Historical degradation from large scale monoculture has resulted in the majority of the vegetation degrading into scrub.
- Immense damage has been done to the existing vegetation by the free roaming and poorly managed populations of livestock.
- Poor management in agriculture has increased vulnerability to land degradation.
- Frequent and intense droughts have caused the government to import water from other countries to meet national consumption levels.
- Increased passage and intensity of hurricanes have destabilized ecology, settlement, the agricultural industry and the tourism industry.
- Lack of an enforced land management strategy resulting in loss of agricultural land as well as increasing the potential and occurrence of land degradation.

The Way Forward

The priority issues for the successful implementation of the UN CCD in Antigua and Barbuda should be the development of an effective water management strategy, drought mitigation plan and the full enforcement of the NPDP.

Water Management Strategy

Being prone to both severe droughts and heavy precipitation from intense hurricanes policy makers need to be more cognizant of national water supplies. This includes formalizing distribution of portable water, and stronger management of fresh water resources. APUA should first take stock of all available water resources, surface water, ground water and deep ground water (of which the latter has never been used in Antigua). Secondly, the APUA need to develop distribution priorities for Antigua to ensure that not just municipal but also agricultural agents receive water. The present policy where in times of drought restrictions on water usage are enforced should continue as it is an effective response management tool. In an effort to safeguard freshwater resources ghaat sand mining should be strictly prohibited and in the event that it becomes necessary a trained soil engineer or person with similar training should be present to direct the process.

Drought Mitigation Plan

Considering that Antigua and Barbuda has a high susceptibility to drought the development of a drought mitigation plan should be deemed an imperative. As with any mitigation plan this should feature preparedness and response strategies. Foremost in the

preparedness section should be the development of an early warning system for drought. In the development of the early warning system one component should be the establishment of three additional meteorological stations (one in Barbuda and the others possibly at the Christian Valley Agricultural Station and the Nelson's Dockyard National Park). With only one station being used presently the information to be derived may not reflect the national situation. Secondly in the plan, there should be a full assessment of the effects of past drought episodes to determine those areas which consistently suffer the greatest negative effects from droughts and secondly if there are particular land uses which have high risk potential.

In a matter of the response aspect of the drought mitigation policy, potential actions could be as follows:

- Culling of livestock populations (dependent on the severity of the drought and the availability of freshwater/ portable water resources to farms) with incentives by government.
- It should be made mandatory that farmers paddock their animals to prevent roaming.
- Development of a water rationing system
- Establishing an emergency fund in the event that water has to be imported to meet the municipal and agricultural demands

Enforcement of NPDP

The NPDP provides the government and stakeholders with the key to more informed and effective decision making for the development of the nation. The NPDP not only encourages the use of proven development strategies but also encourages the use of public opinion and traditional knowledge. By utilizing this well developed and more structured system there can be a greater interpretation of national policies and visions for development. Also the NPDP must be regarded as the official planning tool to reduce if not altogether arrest incidents of land degradation within Antigua and Barbuda. Also to be considered is the enforcement of the Integrated Watershed and Coastal Areas Plan for reasons stated previously. Part of this will include the strengthening of the agencies responsible for the monitoring and management of coastal sand resources.

Combating desertification and drought in Antigua and Barbuda will require the development of more than just plans and policies towards the early prediction, monitoring and response to different desertification episodes. Combating desertification within Antigua and Barbuda will require above all else the infrastructure to enforce these plans.

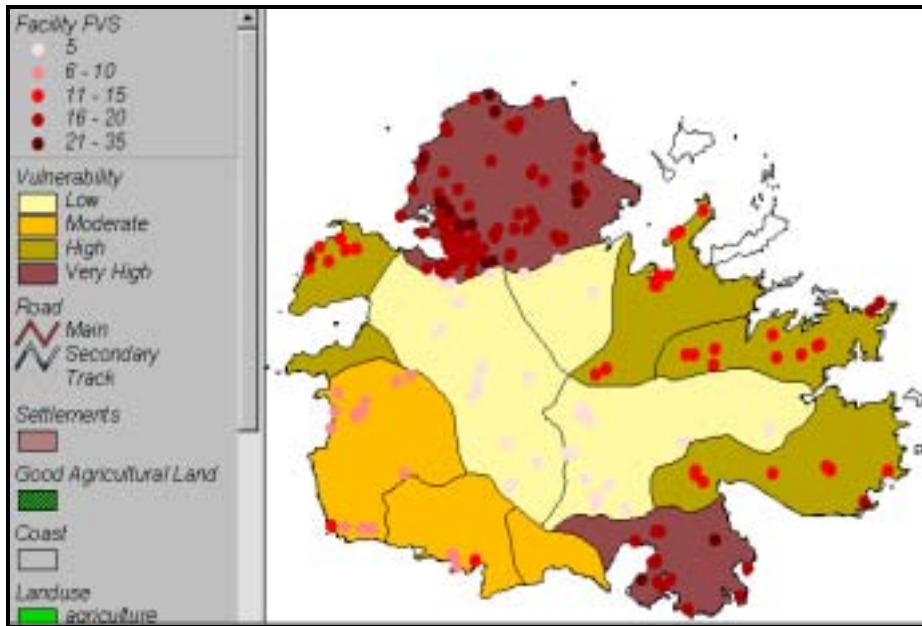
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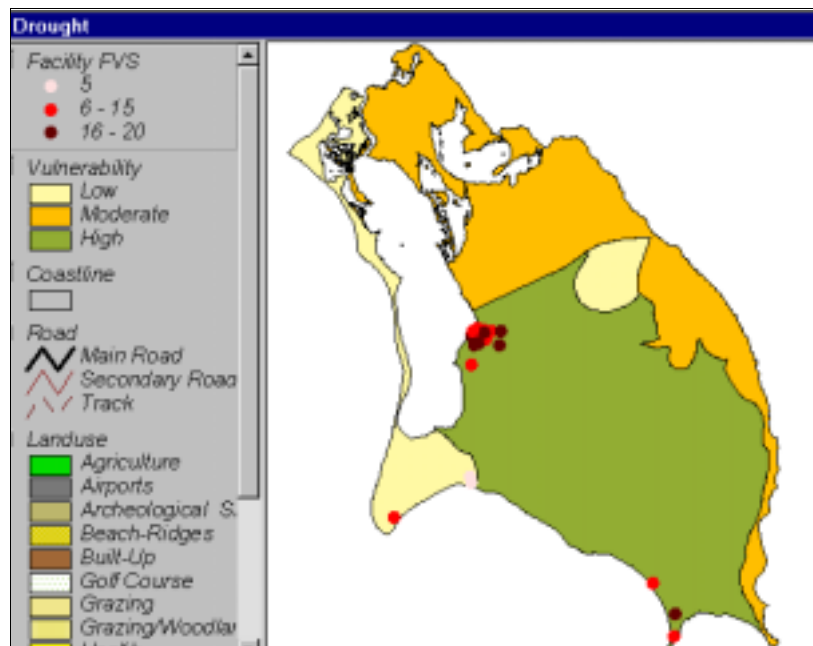
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2001 Ministry of Planning, Implementation and Public
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Annex 1: GIS Vulnerability Maps Developed through the Post Georges Disaster Mitigation Project in Antigua & Barbuda and St. Kitts & Nevis

A. Drought Maps

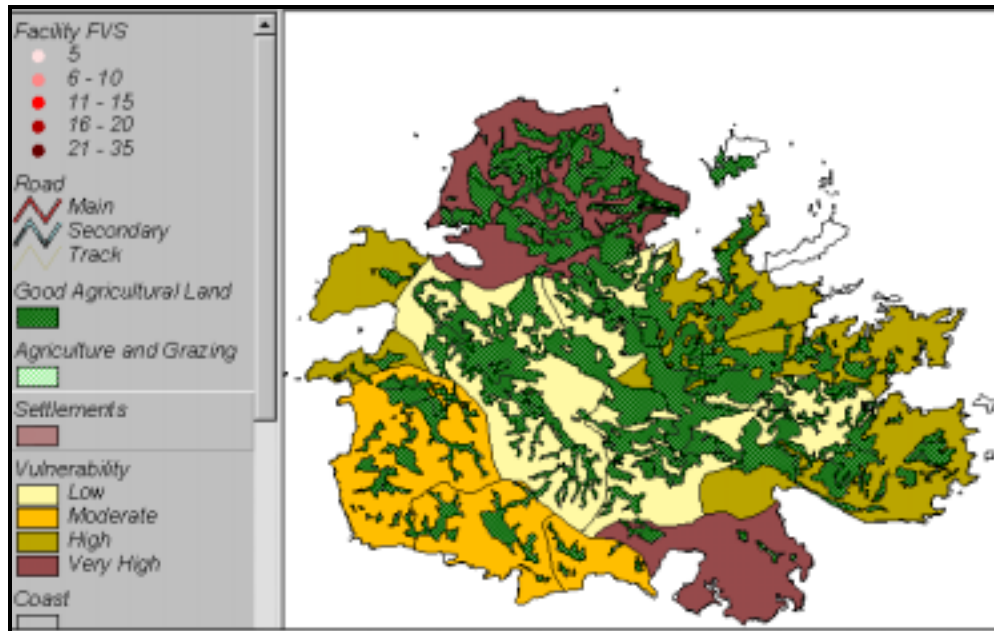


A.1 Antigua Drought Zones and Facility FVS

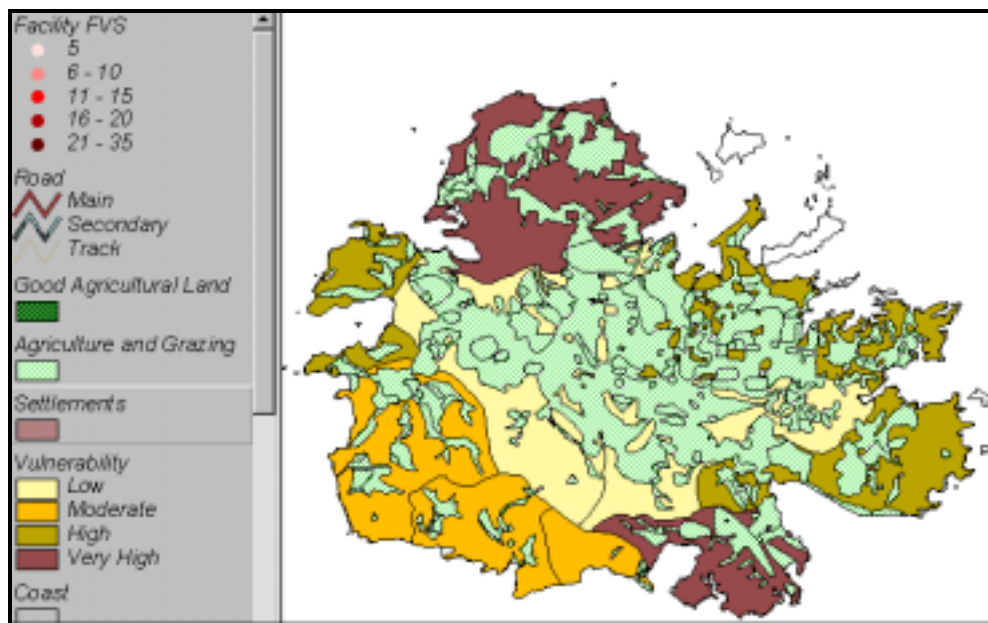


A.2 Barbuda Drought Vulnerability Zones and Facility FVS

B. Agriculture Maps

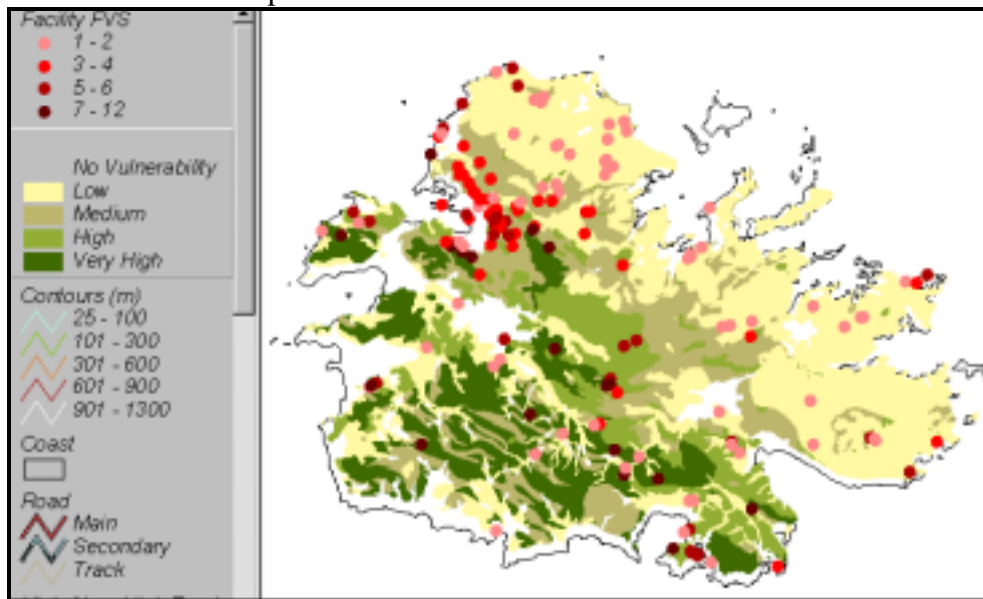


B.1 Antigua Location of Good Agricultural Land

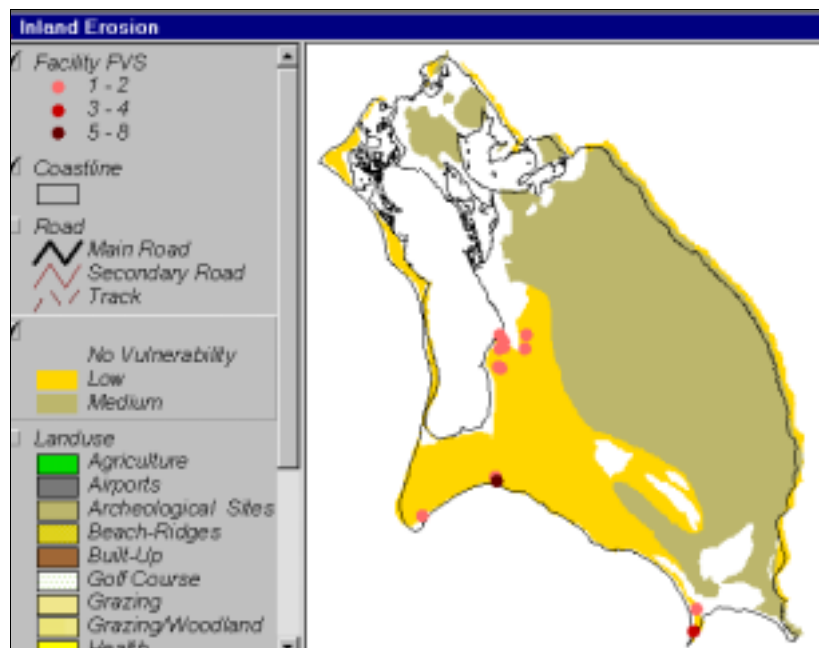


B.2 Antigua Location of Existing Agriculture and Grazing

C. Inland Erosion Maps

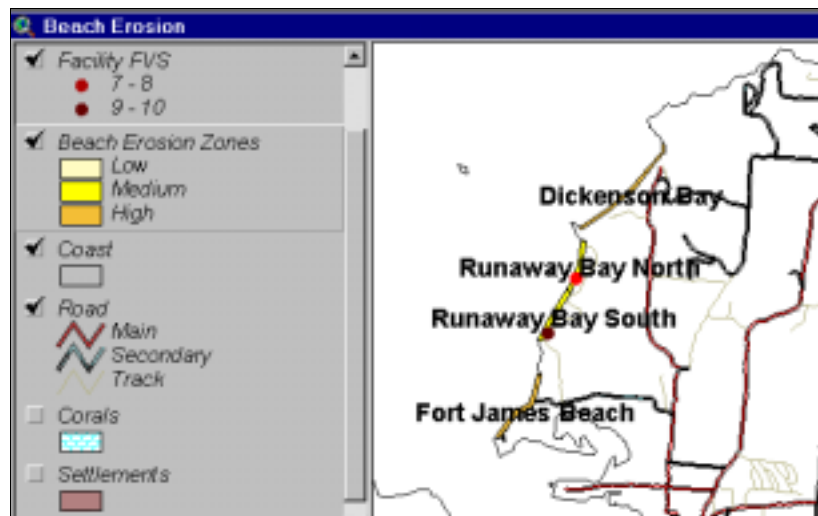


C.1 Antigua Inland Erosion Zones and Facility FVS



C.2 Barbuda Inland Erosion and Facility FVS

D. Beach Erosion Map



D.1 Facilities Most Vulnerable to Beach Erosion in Antigua

All maps contained in Annex 1 can be located in the OAS website. <http://www.oas.org/pgdm>. The National Office of Disaster Services, Antigua and Barbuda authorized the publication of all maps seen in this Annex. The source of these maps was the Antigua/Barbuda Hazard Vulnerability Assessment Project: Final Report. This project was conducted through the assistance of USAID and OAS.

Annex 2: List of Existing Legislation Relevant to Combating Desertification in Antigua and Barbuda

Relevant Area	Law
Land Use	Town and Country Act (Cap 278, 1948) Town and Country Planning Regulations (SRO No. 24, 1953) Land Development and Control Act (No. 15 of 1977) Antigua Agricultural Development Corporation Act No. 11 of 1978 Crown Lands (Regulation) Act (Cap 130, 1917) The Crown Lands (Land Settlement) Regulations (SRO No. 24, 1930)
Agriculture	The Pesticides Control Act (No 15 of 1973) The Plant Protection Act (Cap 102)
Forestry	Forestry Act (Cap 99, 1941) Forestry Regulations (SRO No. 13, 1941 and SRO No. 42, 1952) The Bush Fires Act (Cap 62, 1901) Bush Fires Act (Cap 303)
Water	The Public Utilities Act (No. 10 of 1973) Watercourses and Water Works Regulations (SRO 23, 1954 and SRO No. 24 of 1961)
Beaches	Beach Control Act (Cap. 297, 1959) Beach Protection (Cap. 298, 1957) Beach Protection (Ammendment) Act (No. 1, 1968)
Marine	The Fisheries Act (No. 14, 1983)
Protected Areas	The National Parks Act (No. 11 of 1984) National Parks (Ammendment) Act (No. 3 of 1986) The Marine Areas (Preservation and Enhancement) Act (No. 5 of 1972) The Marine Areas (Preservation and Enhancement) Regulations (SRO No. 25, 1973) The Marine (Restricted Areas) Order (SRO No. 47, 1973)

This information was provided in this table was taken from the Integrating Management of Watersheds & Coastal Areas in Small Island Developing States of the Caribbean: National Report for Antigua & Barbuda.