FRESHWATER COUNTRY PROFILE

BARBADOS

Decision-Making

Programmes and Projects

A. Integrated Water Resources Development and Management
B. Water Resources Assessment
C. Protection of Water Resources
D. Drinking Water Supply and Sanitation
E. Water and Sustainable Urban Development
F. Water for Sustainable Food Production and Rural Development
G. Impacts of Climate Change on Water Resources

Status

Capacity-Building, Education, Training and Awareness-Raising

Information

Research and Technologies

Financing

Cooperation

Decision Making: The National Commission on Sustainable Development (NCSD) was established with the mandate to advise Government on measures required to integrate environmental and economic considerations in decision-making processes and on global issues of sustainable development; to facilitate national level coordination mechanisms on sustainable development; to promote greater understanding and public awareness of the cultural, social economic and policy approaches to attaining sustainable development in Barbados. The National policy on Sustainable Development has been published and strategies to increase national awareness as well as to implement the recommendations of the policy are being developed.

The Barbados Water Authority (BWA) is a statutory corporation that is responsible for the management and control of water resources. It is responsible for managing, allocating and monitoring the water resources of Barbados with a view to ensuring their best development, utilization, conservation and protection in the public interest. It is also responsible for the designing, construction, acquisition, provision, operation and maintenance of water and sewerage works for the purpose of supplying water for public purposes and the receiving, treating and disposing of sewage, respectively. The process of policy formulation is generally conducted through the work of a committee of experts and stakeholders. This is a initiative aimed at involving all major stakeholders in the decision-making process. The BWA was an active participant in the work of the National Commission on Sustainable Development and provided information on water resources and recommendations for conservation activities for inclusion into the National Policy on Sustainable Development. There is an appeals process under the existing BWA Act for conflict resolution.

National Strategies and Policies are contained in A Draft Policy Framework for Water Resources Development and Management in Barbados document. The policy for integrated land and water management and development is contained in the draft policy noted above and in the Environmental Management and Land Use Planning for Sustainable Development Project (EMLUP) Plans currently being finalized under the Ministry of Housing, Lands and the Environment. The policy for disaster preparedness, particularly with respect to floods and droughts are contained in, the Drought/Emergency Management Plan.

National Water Conservation Plan: This plan has been accepted by the Board of the Barbados Water Authority and is currently in the implementation phase. The Barbados Water Authority is the agency responsible for the management of water resources. The National Conservation Plan comprises two parts, long-term ongoing measures such as leakage reduction and universal metering and short-term measures such as temporary shutdown of parts of the system on a rotational basis or temporary licence restrictions on private abstractions.

The Emergency Drought Management Plan: A drought and emergency Plan was approved by the Planning and Priorities Committee in 1997. This is a plan of action with respect to drought. It identifies parameters that would be used to monitor, forecast and predict the impact of drought. Such parameters include - rainfall measurements, groundwater measurements, and salinity and weather data from the Meteorological Office as well as reservoir levels. As a result of this, the BWA has now started looking at establishing a rainfall-gauging network to supplement the existing network so that estimation could be made on the impact and variation of rainfall.

The Pesticide Control Board deliberately restricts or bans products that are likely to have a deleterious effect on the environment, particularly with respect to the contamination of the potable water supply; and the Barbados National Standards Institution has legislative responsibility in collaboration with the Ministry of Health, in instituting strategies aimed to guarantee the general environmental safety.

Programmes and Projects:

A: Integrated water resources development and management: There are three major programmes in this area: first, the Prevention of pollution of freshwater supplies that is achieved through a Ground water Protection Zoning Policy implemented in 1964. The is land is subdivided into five water protection zones. Zone 1 is closest to the production wells or areas earmarked for such and have the most stringent restrictions on development activities. Zone 5 has the least restriction. The boundaries for the zones are based on travel times of pollutants. Enforcement is through the Town and Country Development Planning Office, Ministry of Health and the Barbados Water Authority. This is coupled with a nationwide water quality monitoring programme which is carried out by the Barbados Water Authority and the Environmental Engineering Division of the Ministry of Housing, Lands and the Environment; second, the Water Conservation, which consists in a public education campaign that has been launched by the BWA which started with the distribution of free low water use shower heads and kitchen faucet Aerators to customer not in arrears (30,000 were distributed). Special Programmes are also in place to work with private sector in the implementation of water conservation projects. Currently the BWA is working with the Ministry of Education on a school project (West Terrace Primary School) where a private sector supplier of low water use fixtures has retrofitted the water fixtures at the school for free and water use is being logged and monitored. The BWA, EED and Ministry of Tourism are also collaborating to implement a Water Conservation and Management Project in the Tourism and Hotel Sector. Two sewerage projects are currently in progress: one to cover the South Coast and the other the West Coast. The treatment plant for the south coast has been completed and work has been ongoing for house connections. Work on the West Coast Sewerage Project got underway in 2002. Also of significance is the fact that a 30,000m3/day Reverse Osmosis Desalination Plant, desalinating brackish water was constructed in 2000 to augment the potable water supplies.

B. Water resources assessment: Recently there has been an increased use of GIS in various aspects of environmental management data collection. Specifically, the technology has been used in land-use assessment, coastal zone monitoring, soil erosion monitoring, freshwater resources monitoring.

C. Protection of water resources, water quality and aquatic ecosystems: Some environmentally sound technologies (ESTs) (devices etc) are available in Barbados and upon serious discussion; specific incentives and economic instruments have been applied to encourage consumption. These include water-saving devices - provided free to Paid-up domestic consumers of the Barbados Water Authority; solar water heaters. A good example of a best practices in Barbados in relation to EST is the case where consumers were given a tax rebate of a maximum of BDS $3500.00.

D. Drinking water supply and sanitation: Please see section on Sanitation

E. Water and sustainable urban development: As population pressure on the island increases there is likely to be an increase in the pressure for settlement encroachment on areas protected by Zones 1 and 2 of the Zoning Policy. Presently the safety of the water supply in these areas is ensured by limiting encroachment in Zone 1 areas and through the chlorination of the water supply. Any expansion of urban settlements would require careful analysis of the groundwater flow regimes and of he ability of biological agents to survive in these environments, as well as continuous monitoring and full enforcement of regulations in these areas.

F. Water for sustainable food production and rural development: Agricultural water usage in Barbados has been estimated at 10.4Mgl/day. A significant proportion of food crops are produced by the small farm sector that relies on the potable water supply. It is estimated that 1026 ha are irrigated by this method. Optimization of water resource use in agriculture can be improved through increased pricing strategy associate with universal metering.

G. Impacts of climate change on water resources: Freshwater is likely to be impacted in two ways by climate change- firstly by sea level rise which is likely to increase salt water intrusion within freshwater aquifers and secondly by the increased severity of droughts. The faculty of Science and Technology at University of the West Indies (UWI) is coordinating a project on the diffusion of salt water into coastal aquifers and as mentioned earlier, a Drought Management Plan for the island has bee prepared.

Status: There is almost ninety-eight percent coverage of potable water supply. Ninety-six percent of the population receives piped water directly to their homes, while the remaining population has access from public sources. The pricing policy (Block tariff structure) is intended to ensure that the basic needs of the poor are met at minimal cost. Currently the Social Welfare Department covers the cost of water bills for the indigent and aged poor. Percentage of urban sewerage presently treated is less than eight percent. All drinking water is treated by disinfections with chlorine gas.

Currently there are no formally adopted standards or guidelines for the water industry in Barbados. However, the World Health Organization (WHO) Drinking Water Guidelines, USEPA Regulations of Standards, British Water Industry Standards and the American Water Works Association Standards and Codes of Practice are utilized on a voluntary basis as needed.

All lands in Barbados are classified in accordance with water protection policy. There are 5 Water protection Areas (WPA) with varying degrees of planning controls enforced by the Town and Country Development Planning Office (TCDPO).

Drip irrigation is promoted over sprinkler systems and greater use of mulching is promoted to help reduce agricultural water use.

Capacity-Building, Education, Training and Awareness-Raising: The Barbados Water Authority (BWA) is also involved in a public education programme, which they deem to be an important part of any water conservation programme. A public education campaign has been launched by the BWA, which started with the free distribution of low water use showerheads and kitchen faucet aerators to customers not in arrears (30,000were distributed). Special programmes are also in place to work with the private sector in the implementation of water conservation projects. Currently the BWA is working with the Ministry of Education on a school project where a private sector supplier of low water use fixtures has retrofitted the water fixtures at the school free of cost. Under this project the water used is being logged and monitored. The BWA, Environmental Engineering Division and Ministry of Tourism are also collaborating to implement a Water Conservation and Management Project in the Tourism and Hotel Sector.

Priority constraints to implementing effective programmes to address the issues raised in this area are limited funds and the need for continued training of available human resources.

Education of policy makers in respect of the concept utilization and policy design of water resource management policy is basically achieved through presentations and public relations officer campaigns for the public. There are no specific programmes as yet, except as part of the NCSD policy. Currently, training has been achieved through attendance at workshops organized by the Caribbean Basin Water Management Project (CBWMP), the World Bank, Caribbean Science and Technology Association, Inter-American Development Bank (IDB) and the Caribbean Water and Waste-Water Association (CWWA).

The syllabus for early-childhood education also seeks to expose students to the importance of caring for the environment. At the junior level in Primary school, environmental education forms an integral part of

the Integrated Science syllabus and includes study of the environment, safe drinking water, sanitation as well as recycling.

Information: Sustainable development indicators related to freshwater resources have been developed by the NCSD under the National Indicators Programme (NIP), which has defined national indicators for all policy areas, including freshwater resources. Presently, the programme has reached the data collection stage in terms of trying to discover the level of existing available information and formats.

Recently there has been an increased use of GIS in various aspects of environmental management data collection. Specifically, the technology has been used in land-use assessment, coastal zone monitoring, soil erosion monitoring, freshwater resources monitoring. With respect to satellite-based remote sensing the Meteorological Office has been using satellite information for a long time to carry out weather monitoring and forecasting and for disaster preparedness. The regional project Caribbean Planning for Adaptation to Climate Change (CPACC) will soon be using IKONOS satellite imagery to monitor climate change activity. There is a lot of satellite-based environmental data available. The drawback seems to be lack of receiving systems to capture this data and the need for equipment and trained staff. With specific reference to the Indicators programme, once the data is gathered and information system is created, it is hoped to launch a large-scale public awareness campaign to sensitize the public on our progress towards sustainability.

Research and Technologies: Facing the prospects of less than enough water to satisfy the Barbadian population, the BWA contracted a consultant to examine the feasibility of establishing a desalination facility in Barbados. Thus a desalination plant was set up in 2000.

The Barbados National Standards Institute (BNSI) is involved in the testing of water saving devices for showers and taps in conjunction with the Barbados Water Authority.

Financing: This sector is financed mainly through the operating costs of the Barbados Water Authority, which are partly recovered through charges etc, as well as some national budget funds etc as appropriate.

Cooperation: The Barbados Water Authority collaborates with the Caribbean Council for Science and Technology, based in Trinidad and Tobago, providing expertise on initiatives to develop and encourage the adoption of integrated water management strategies in Caribbean Countries.

* * *