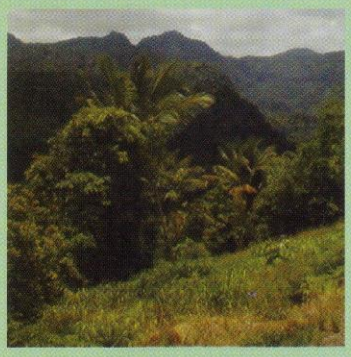
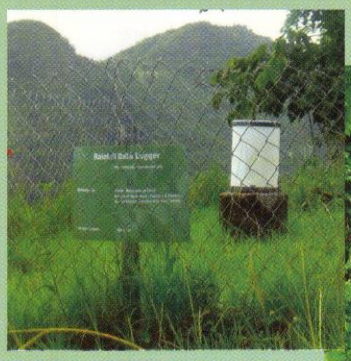
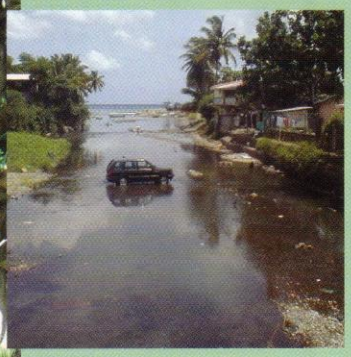
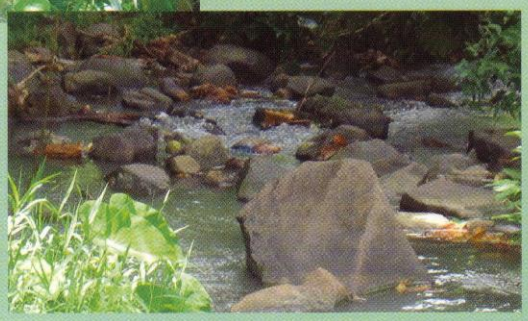
National Water Policy

Saint Lucia



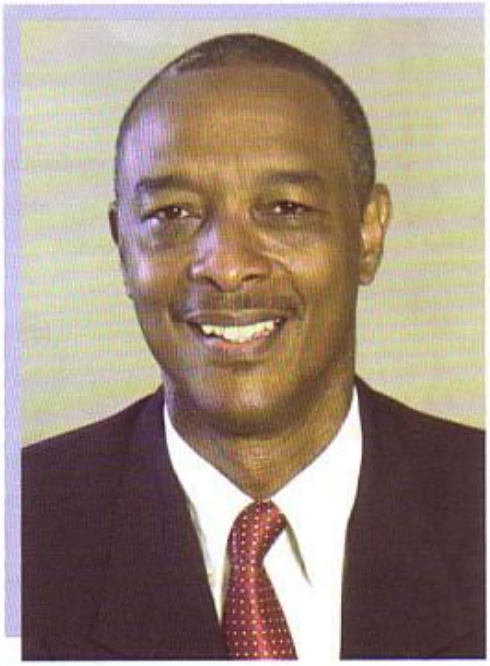






2004

FOREWORD TO
ST. LUCIA NATIONAL WATER POLICY



Dramatic increases in the demand for fresh water coupled with a continuing rapid decline in the resource base has triggered a timely and coherent response from the Government of St. Lucia.

In this regard, government has directed the formulation of a National Water Policy which would review and contextualize the current situation; set objectives to be realized; and establish strategies and guidelines to be adopted toward achieving the stated goals.

The process used in the formulation of the policy is based on the realization that water is inextricably intertwined with numerous other issues such as land use practices, climate change and coastal zone management. This reality dictates that the approach to the formulation of the water policy should be exhaustively consultative with the end result being reflected in a document which succinctly and coherently articulates the role and responsibilities of the various stakeholders managing the water sector in an integrated manner.

The focus of the policy is twofold:

- Promoting the integrated and sustainable management of the resource; and
- Delivery of a potable water supply and sewerage service throughout Saint Lucia.

The policy underpins the drafting of a new Water and Sewerage Act which provides the legal and regulatory instruments for the management of the sector. The Act satisfies a critical pre-condition for the attraction of the requisite capital investment to enhance the infrastructure and operational efficiency of the main operator.

The National Water & Sewerage Commission and the Water Resource Unit of the Ministry of Agriculture, Forestry and Fisheries, as the lead agencies in the process of policy formulation have done an admirable job in spearheading an exercise which is so critical to the social, economic, political and environmental well being of Saint Lucia.

By their unwavering support to the policy formulation process, the Government of Saint Lucia continues to demonstrate the will and commitment to reform the Water Sector leading to the satisfactory provision of this important service to all communities.

Honourable Felix Finisterre
Minister of Communications, Works, Transport and
Public Utilities

CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community
CCST	Caribbean Council for Science and Technology
CEHI	Caribbean Environmental Health Institute
CSC	Commonwealth Science Council
EIA	Environmental Impact Assessment
EHIA	Environmental Health Impact Assessment
GEF	Global Environmental Facility
HTS	Hunting Technical Services
IWCAM	Integrated Watershed and Coastal Area Management
IWRM	Integrated Water Resources Management
MAFF	Ministry of Agriculture, Fisheries and Forestry
MACC	Mainstreaming Adaptation to Climate Change
MCM	Million Cubic Metres
NEMO	National Emergency Management Organisation
NWSC	National Water and Sewerage Commission
OAS	Organisation of American States
WASA	Water and Sewerage Authority
WASCO	Water and Sewerage Company
WIBDECO	Windward Island Banana Exporting Company Limited

PART ONE
BACKGROUND

Water is essential to national prosperity, environmental sustainability and quality of life. It is a catalyst for economic development and a vehicle for empowerment and poverty alleviation.

There is growing awareness of and concern for the issues and problems in the water sector, which threaten economic, social and environmental well-being and demand considerable sums for their resolution. Though the island currently has sufficient freshwater to meet all demands, the resources are unevenly distributed in both time and location. Shortfalls relate to both the non- agricultural and agricultural sectors and related capital expenditure to meet the shortfall is estimated.

Systematic planning as a matter of policy, based on reliable information and a range of plausible alternatives has the potential for containing demand and reducing the amount of capital expenditure needed.

Against this background, the Government of Saint Lucia embarked on a process aimed at producing a policy and strategy to guide the sustainable use and development of the island's freshwater resources.

1.1 *The Policy Development Process*

The process was driven by Government's philosophy that there must be joint ownership of the process of change. Consequently, the process was underpinned by dialogue and consultation among the social partners, to generate awareness of the major issues and challenges facing the Water Sector and to develop a coordinated approach to overcoming the challenges and to achieve fundamental and sustainable water resource use and development.

The process involved four stages. The first stage involved a consultancy which produced an analysis of the current situation within the Water Sector and helped to identify the threats posed by a continuation of a "business-as-usual approach to management and resource use[1].

The second stage involved a National Consultation, attended by representatives from the public and private sectors and non-governmental organisations[2] at which the Consultant's report was reviewed and priority concerns and actions were identified.

The third stage involved another consultancy which produced a draft Water Policy drawing on the outputs of the earlier stages.

The fourth stage involved a series of Focus Group meetings with stakeholders in the areas of Health and Sanitation, Agriculture, Industry and the Environment respectively. These meetings were used to build ownership of the process as well as the product as well as to invite recommendations on ways in which the Draft Policy could be refined prior to its eventual submission to the Cabinet of Ministers for consideration.

This process was jointly supported by a number of national, regional and international agencies including the Organisation of American States (OAS); the Caribbean Council for Science and Technology (CCST); the Caribbean Environmental Health Institute (CEHI) and the European Union (EU), through the Saint Lucia Water Resources Management Project.

1.2 *Structure of the Document*

The remainder of this document is set out in two Parts. Part 2 outlines the current situation and problems within the Water Sector, as well as the implications which this situation holds for Policy. Part 3 outlines a policy and strategic framework which will guide the island's approach to sustainable use and management of the island's water resources.

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[1] Report on National Water Situation and Assessment of National Water Profile prepared by AGRICO Ltd. December 2001.
[2] The Consultation was held on December 10, 2001 at the Conference Centre of the National Insurance Corporation.

Based on the approach adopted at the National Consultation, both parts of the document are framed along the lines of the categorizations adopted by the World Water Council (WWC) for the Second World Water Forum held in March 2000, as follows:

(a) Water for Health and Sanitation
(b) Water for Agriculture and Food
(c) Water for Industry
d) Water for Nature (Environmental Sustainability).

1.3 *Next Steps*

Following the review and adoption of the Policy by the Cabinet of Ministers, a detailed Implementation Plan will be developed. The development of this Plan will be led or coordinated by the National Water and Sewerage Commission (NWSC) with input from relevant stakeholders at the national and community level. Taking into account the agreed Policy, the Plan will:

a) identify principal activities for each of the strategies contained in the Policy, along with budgets and realistic time lines for each activity;
b) identify the tasks and responsibilities of the respective agencies involved in implementing each activity;
c) specify investments;
d) define more detailed targets;
e) programme the changes to the legal and institutional arrangements;

PART TWO

ANALYSIS OF THE CURRENT SITUATION

2 CURRENT SITUATION IN WATER RESOURCES MANAGEMENT

2.1 *Water Resources Management*

Like most other Caribbean countries, the management of Saint Lucia's freshwater resources is characterised by the followin
a) a chronic lack of coordination among public sector agencies charged with designing and implementing water resourc
policies and programmes;
b) a multiplicity of laws, each dealing separately with various aspects of resource management, thus encouraging
compartmentalised and isolated approach to environmental management;
c) the absence of credible arrangements for involvement of civil society in sustainable development initiatives; and,
d) the lack of understanding and awareness of the principles of sustainable development and the inseparable linkages betwe
social and economic uses.

2.1.1 *Legal, Policy and Institutional Framework*

The Water and Sewerage Act (#13 of 1999) established the National Water and Sewerage Commission (NWSC) "...
regulate the granting of licenses, the development and control of water supply and sewerage facilities and related matters
The Act identifies the NWSC as the body responsible for the orderly and coordinated development and use of water resourc
and for the promotion of a national policy for water. Currently no such policy exists and precise responsibilities have not be
articulated with respect to various aspects of policy formulation. Further, responsibilities for water resource management a
not fully defined.

There are a number of other agencies whose mandates bear some relationship to integrated water resources management. The
agencies are identified in Table 1.

Table 1 Agency, Responsibilities and Enabling Legislation

AGENCY	ENABLING LEGISLATION	RESPONSIBILITY
Water and Sewerage Company Incorporated (WASCO)	Water and Sewerage Company Act (1999).	• productioin and supply of freshwater. • maintenance of water production and supply infrastructure.
Department of Forestry, MAFF	Forest, Soil and Water Conservation Act (1946)	• Management of Forest resources. • Establishment of forest reserve and protected forests. • Protection of Forest, Soil and Water. Wildlife resources. • Management of water catchments.
Department of Forestry, MAFF	Wildlife Protection Act, (1980)	• Conservation of wildlife. • Designation of wildlife reserves
Ministry of Planning, Housing, etc.	Physical Planning and Development Control Act (2001)	• Land use planning, development control, formulation and implementatiuon of housing policy, environmental management.

Department of Agriculture, MAFF	Agricultural Small Tenacies Act (1983)	• Enforcement of regulations requiring sound soild and water conservation practices on small holdings
Ministry of Agriculture, Forestry & Fisheries	Land Conservation & Improvement Act (1992)	• Provision for better land drainage and conservation
Department of Agriculture, MAFF	Pesticides Control Act (1975; Pesticides Control Regulations (1987)	• Establishment of Pesticide Control Board; • Control of import, use, labeling and storage of pesticides; • Registration of land licences for use and storage of pesticides.
Department of Agriculture, MAFF	Plan Protection Act, (1988); Regulations SI, 1995	• Control of pests and diseases injurious to plants; • Prevent the introduction of potentially harmful exotic species.
Ministry of Health	Public Health Act (1975). Public Health Regulations 1978, 1980.	• Regulatory oversight of water quality, excreta disposal, sanitary facilities, food safety and drainage.
National Solid Waste Management Authority	St. Lucia Solid Waste Management Act (1996).	• Responsibility for solid waste disposal.
St. Lucia National Trust	St. Lucia National Trust Act (1975)	• Management of Parks and protected areas; • Preservation of buildings and other objects of historic and architectural value.
St. Lucia Fire Services	St. Lucia Fire Services Act (1976)	• installation and maintenance of fire hydrants; • front-line response during fire-related emergencies.
National Emergency Management Organisation (NEMO)	National Emergency Powers Act (1995). Disaster Preparedness and Response Act (2000)	• coordinates efforts at mitigating natural and man-made disasters, including floods, droughts, hurricanes, tsunamis, earthquakes, dam collapse, famines, and plaques.
National Conservation Authority	National Conservation Authority Act (1999)	• Establishment of an authority for the care and management of public parks and beaches.

.1.2 *Supply and Demand*

aint Lucia depends solely on surface water to meet to its water requirements. Rainfall is both spatially and temporall istributed, with annual values ranging from 1524 mm in the northwest and south-east, to more than 3048 mm in th ıountainous interior.

he island's freshwater needs are supplied via an integrated network of river intakes, treatment plants, transmission pipeline nd distribution systems, under the operation and control of WASCO. Approximately 42,000 customers are served by th ystem, evenly distributed between the northern and southern networks. (WASCO, 2000).

he island is divided into thirty -seven watersheds, seven of which (Marquis, Dennery, Roseau/Millet, Soufrier Voodlands/Grace, Troumassee, Desruisseau/Canelles and Patience/Fond), are classified as major sources of surface water.

In 1995, a new water supply system was developed to serve the northern half of the island. The nucleus of this system is the Roseau Dam and Millet Reservoir, with a storage capacity of 700 million gallons. Significant investments are being made to improve the water transmission and treatment facilities between the Dam and the consumer bases in the north.

Notwithstanding these improvements, the public water supply, has in recent years, been severely impacted by pressures of increased demand due to increasing socio -economic development, destruction of upper watersheds, increasing exploitation of the rivers and wetlands, and an inefficient, inadequate and aging water distribution network. Low river base flows experienced during the dry season and high turbidity during the rainy months, combine to significantly constrain the ability of the Water and Sewerage Company (WASCO) to meet the current demand for water island wide. During the dry season (usually January to May) water production can be as low as 24.5 million litres per day, as compared to a value of approximately 41 million litres per day during the rainy season (Ministry of Agriculture 1998).

It is widely suggested that present water demand is exceeding the available supply and that the potential increase in future demand can only serve to exacerbate this deficit. While the available data does not allow for an exact determination of supply/demand dynamics, data of the potential supply/demand situation within various sectors and zones and for the island as a whole point more to a suppressed demand than a real deficit. (AGRICO,2001).

The evidence indicates that water demand continues to change rapidly in certain regions due to high infrastructural development and migration of people to more densely population regions. A current assessment of water available for public water supply estimates an approximate yield of 18.9 million cubic metres per year (MCM/yr.) while net production is presently estimated at 16.55 MCM/yr. High losses of up to 47% in unaccounted-for-water (UFW) reflect an aging system. WASCO has instituted an aggressive programme, including metering and a strengthened maintenance programme, aimed at reducing levels of UFW.

Table 2 provides some indication of trends in water demand among the various sectors.

Description	Percentage %	
	1987	2010
Domestic / Minor Commercial	48.6	53.0
Hotel	9.6	10.0
Government / Institutional	7.0	6.7
Industrial	2.5	5.3
New Commercial	0	2.0
Unaccounted for	32.3	23.0

[Source: Flynn et al, 1998]

The rural water supply situation is critical. Facilities for the treatment and storage of raw water, as well as treated water, are inadequate to meet the growing demand for freshwater, especially in the dry season.

A Study of the water supply needs for the South, undertaken as part of the Southern Region Water Supply Project, estimated the 1997 unrestrained demand for that region to be approximately 3 million gallons per day (GPD). Based on a population forecast for the area of 76,000 by the year 2025 (which includes major touristic, housing, institutional and recreational projects the demand for water is projected to increase to 5 million GPD[3].

[3] In determining these projections, a gradual reduction in leakage to 12.5% by the year 2025, was assumed.

Rural water sources, comprising mainly small and medium intakes, are subject to gross contamination in the rainy season. This results directly from runoff contaminated by erosion due to uncontrolled agricultural intensification, poor agricultural practices (such as cultivation or construction on steep slopes and along river banks), inappropriate land use, and direct and or, indirect discharge of untreated effluent into waterways. Problems encountered result in the main from inadequate public education and participation in ecosystem conservation efforts.

2.1.3 *Allocation and Pricing Mechanisms*

The main uses of water resources include:

(a) health and sanitation.
(b) agriculture and food production.
(c) manufacturing.
(d) ecological.
(e) recreational uses.

Generally, water is not treated as an economic good and consequently water rights, water markets and pricing are not used to improve management and for the most part, there is no incentive for consumers to use water efficiently. Presently, there is no clear strategy or criteria by which to establish allocation priorities. Generally, allocation mechanisms are administratively-based, with current sector demand used to guide allocation. In addition, priority is given to uses such as health and sanitation and tourism where there are health risks associated with water shortages.

The current tariff structure was inherited from the Water and Sewerage Authority (WASA)[4] with increases made in 2000 to offset the financial indebtedness of the new company WASCO. There is a certain degree of cost recovery but this has not been quantified against medium to long term plans. Still, the expenditure of the average household on water is about less than half that spent on electricity (AGRICO, 2001). A financial plan is being drawn up but thus far, no steps have been taken to determine the economic value of water. Table 3 provides an indication of the previous and existing tariff structure.

Table 3: Previous and Existing Tariff Structure

		RATES / 100 GALLONS	
		Prior to 2000 ($)	**Current ($)**
Domestic	less than 3000 gals	4.10	7.35
	more than 3000 gals	7.78	15.00
Commercial		10.28	20.00
Government		6.4	14.00
Ships		40	40.00
Hotels		11	22.00

The mobilization of the necessary financial resources for water resources management remains a critical management issue. Historically, water supply projects have been financed by the Government, with very little private sector participation. Presently, the use of the capacity of the private sector is limited to the manufacturing of bottled water, engineering services and construction

2.1.4 *Resource Monitoring and Assessment*

Present knowledge and understanding of the island's water resources situation is limited due to the unavailability of data and information. Only rainfall data is available, thus preventing any realistic

[4] WASA was replaced by the Water and Sewerage Company Incorporated, in 1999.

assessment of water resources. Currently, monitoring of stream flows and river water quality is quite inadequate. In the mid-1980's, attempts were made to establish a system for river flow monitoring, but this has not been maintained and at present continuous river stage monitoring is no longer being undertaken. Instead, the Ministry of Agriculture Forestry and Fisheries (MAFF) takes spot measurements of river flow on a weekly basis.

MAFF collects rainfall data from a total of 33 agro-meteorological stations. Of these, two are managed by the Meteorological Services Department, while two are managed by the Windward Islands Banana Exporting Company's (WIBDECO) Technical Services Division and the Caribbean Agriculture Research and Development Institute (CARDI respectively. Rainfall data of reasonable quality is usually available as daily, monthly and yearly totals. Rainfall intensity data is available for only one of the gauging sites.

The monitoring of water quality is also unsatisfactory. The Ministry of Health and WASCO undertake testing for faecal coliform and other parameters. However, the focus of this testing program is essentially geared towards meeting international standards and guidelines for drinking water. As a follow-up to a project entitled: The Development and Integration of Biotic and Chemical Monitoring with Land Use Assessment for Tropical River Resource Management undertaken between 1994 and 1996, the Caribbean Environmental Health Institute (CEHI) generated water quality information at 13 streams on the island. However this programme has not been sustained.

A current assessment of the water available for public water supply indicates an approximate yield of 18.9 million cubic metres per year (MCM/yr.). Net production is presently estimated at 16.55 MCM/yr., due to relatively high losses in the system.

Previous attempts at developing groundwater for public water supply purposes have met with little or no success and in only a few instances has groundwater been developed for private use. Anse Chastanet Hotel operates the only reported ground water extraction facility, which produces water of acceptable quality. Currently, interest has been expressed in undertaking geological exploration to determine the existence of bedrock aquifers capable of solving local water shortage problems.

2.1.5 *Education and Training*

Presently, there is no comprehensive training programme in Water Resources Management at the National level. However, from time to time, regional agencies such as the OECS' Environmental and Sustainable Development Unit (ESDU), the Caribbean Natural Resources Institute (CANARI) and the Caribbean Environmental Health Institute (CEHI), have delivered workshops on various aspects of water resources management. CEHI routinely conducts short-term training in areas of water quality testing and in the management of sewerage treatment plants. A number of policy makers have also been trained in converting data to information for decision making. CEHI has also trained the staff of the Forestry Department's Environmental Unit in the execution of field methodologies and this Unit has in turn developed a similar training programme for schools.

2.1.7 *Public Education and Awareness*

Currently, there is no comprehensive and sustained public education and awareness (PEA) on water -related issues. Generally, PEA activities are more pronounced during periods of drought, when water conservation is encouraged. During the construction of the John Compton Dam and Millet Reservoir and more recently during the transition from WASA to WASCO, public relations campaigns were launched to inform and educate the public on the aims and objectives of these undertakings. Further, through its Learning and Environmental Action Programme (LEAP), the Forestry Department has sought to sensitise school students to some of the problems confronting the water sector. In 2000, the Department mounted a campaign to sensitize select communities on the importance of water catchment areas. Following a series of training workshops, community groups were established with the aim of protecting the water catchment in their communities through community mobilization and sensitization. Currently, two of the groups are still vibrant. The Talvern Water Catchment Group is engaged in active management of the watershed and is presently engaged in a riverbank stabilisation programme using wattles in the Talvern Watershed. The other group, the Thomazo Water Catchment Group is active in community mobilization and education.

Other initiatives include the training of select communities in river water quality monitoring quality using biological indicators, as well as mass media programs and community consultations. However, these initiatives cannot be regarded as constituting a well designed, comprehensive and sustained public education and awareness campaign that can successfully

3. CURRENT SITUATION RELATING TO WATER FOR HEALTH AND SANITATION

Saint Lucia has made significant progress in providing water services to its people with 95% of the households having access to pipe-borne water. The percentage of households relying on water from rivers, springs and ponds for everyday use has fallen while the use of pit latrines and other types of sanitation has declined. Unfortunately, the poorest of the population have not shared widely in these improvements, and in some cases the poor are still relying on untreated sources such as rivers, for their water needs.

Government has committed to making potable water available to all citizens in such quantity and quality so as to sustain life, irrespective of citizens' ability to pay. Water provided for fire hydrants is also a public responsibility.

Rapid population growth and high rates of urbanisation have contributed to increased pollution of freshwater resources from solid and liquid waste thereby exposing the population to significant health risks.

Many of the threats to human health are a direct result of inadequate sewerage treatment. Within the capital city - Castries, there is a sewer system that serves only the city center and its immediate suburbs. However, the system only collects and disposes of sewerage; i.e. no treatment is done. The collected effluent is pumped directly into the Castries Harbor. Only 13 % of the total population of Castries of 62,342, is connected to this system. Approximately 31% of the population use septic tanks and soakaway systems; 49% utilise pit latrines while 7% use no waste disposal facility.

In the north of the island, the situation is similar despite the presence of the Rodney Bay Sewage Treatment Plant. The Facility is grossly under-utilised. Currently, twelve (12) hotels in the immediate vicinity and 13% of the households (450 h/holds) are connected to this system. No manufacturing plants are connected to the system. This had resulted in growing complaints regarding coastal water quality in the north.

In the south of the island, there is a small collection system serving approximately 200 households. It is estimated that 29% of the population of this area utilise septic tank and soakaway systems with 53% using pit latrines. It is further estimated that only 13% of the population is connected to municipal sewerage treatment facilities[5]. Human health risks are further compounded by inadequate drainage which results in large pools of contaminated water. During severe weather, these pools present a major threat of sewerage-related outbreaks of diseases.

4. CURRENT SITUATION RELATING TO WATER FOR AGRICULTURE AND FOOD

While the agriculture sector depends on the availability of an adequate supply of water for its survival, the evidence indicates that freshwater resources are facing a serious threat from unsustainable farming practices, including uncontrolled agricultural intensification, inappropriate land use (such as cultivation on steep slopes and river banks) and poor irrigation practices. Increased abstraction from rivers inevitably results in reduced downstream flows and reduced water levels in rivers, particularly during the dry season.

Soil erosion is the largest contributor to land degradation and is the single, most important environmental problem facing the island. As has been already noted, the scale of the impact of soil erosion on the water supply is evident in increased river siltation and reduced water quality especially during the rainy season. Further, while flooding induces high dilution ratios with respect to chemical contamination, it facilitates greater run-off washes of top soil as well as debris into streams and rivers, thereby clogging water intakes, and impairing the operation of water treatment plants.

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[5] Draft Regional Synthesis on Trends in Freshwater and Coastal Area Management n Small Island Developing States of the

The supply of water to the agriculture and food sector is plagued by several weaknesses. Cost recovery and operating efficiencies are low, with high levels of wastage due to lack of funding to effect efficiency improvements such as canal lining and reduction in leakage from pressurised irrigation systems. In some cases, farmers use inefficient irrigation and water management techniques. Consequently, it is often difficult to respond to farmers needs as desired. Currently, important parts of the country that could benefit from irrigation and improved water management do not have access to this service.

Irrigation is currently practiced on a very small scale where private users abstract water directly from rivers downstream of domestic water intakes. The need for irrigation systems in order to ensure stability and consistency of banana production for export is an issue that is currently being addressed. A total of 400 hectares have been targeted for irrigation by 2002. However, there is no on-going assessment of the actual availability of water for irrigation by determining catchment water balances and the extent of abstraction by WASCO.

Food safety continues to be a primary concern in the provision of water for post-harvest purposes.

Achieving and maintaining a balance between quantities of water abstracted and water quality, protection of watersheds and other sources of water including freshwater habitats and ecosystems, emerge as key management challenges.

5. CURRENT SITUATION RELATING TO WATER FOR INDUSTRY

The rapid growth of the tourism industry and manufacturing industries (beer, soft drinks, rum, bottled water, paper, and agro-processing) as well as changes in residential development, have increased demands on the water supply. The Tourism industry is a major user of water. Visitor accommodation stands at approximately 4000 rooms, the majority of which are located in the north of the island. The allocation of water to this sector especially during the dry season (which also coincides with the cruise tourism season) has presented a major problem. However, growing attention is being given by the hotel and cruise sectors to water conservation and reuse. Some hotels have installed water saving devices and have retrofitted their plumbing and drainage systems to permit the reuse of wastewater for irrigation purposes. Many of the more modern cruise ships are now equipped with desalination plants as well as water recycling facilities.

The manufacturing sector is also following suit, albeit at a slower pace. A few manufacturing companies including the Windward and Leeward Brewery (WLBL) and Saint Lucia Distillers Ltd. have made impressive steps towards reducing water consumption. WLBL has reduced its consumption of freshwater per litre of beer, by 50% over the past (two) 2 years[6].

Construction activities, urban development and attendant issues of waste disposal, have all contributed and continue to contribute directly or indirectly to the pollution and deterioration of the freshwater supply.

There are no standards or regulatory mechanisms in place to govern the quality of effluent discharged from industrial and commercial establishments. Invariably, such effluent enters the urban drainage system. In the past many hotels especially in the north, utilized their own treatment plant with subsequent disposal of the partially treated effluent in the sea. In some cases the extent of acceptable treatment of the effluent was questionable, but this has improved in recent times.

The absence of properly-sized and maintained drainage systems for collection, channeling and disposal of runoff has exacerbated the problem of soil erosion and sedimentation. Within the public sector, this responsibility falls generally within the purview of the Ministry of Communications, Works, Transport and Public Utilities but is generally treated as an adjunct to road construction. However, sufficient attention is not being given to the importance of determination drainage requirements based on hydrological data, so as to minimise the incidence of flooding. Further, the issue of drainage systems serving as major contributors to near-shore pollution is not being addressed.

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[6] This was revealed by the representative of WLBL at the Focus Group Meeting for Industry.

6. CURRENT SITUATION RELATING TO WATER FOR NATURE

Very little research if any, has been undertaken locally, to help build an understanding of the interactions between the hydrological cycle and associated priority issues such as ecosystems health, land-use impacts and forest cover, climate change and variability and attendant vulnerability to floods and droughts. However, given the absence of clear policies and strategies governing imperatives such as water rights, soil protection and control, and watershed and river protection, it is safe to assume that the health of freshwater and the ecosystems that support it, and thus human health, are being compromised by conditions of water surplus and scarcity.

The rapidly growing population and attendant demands for land and water for income generation has led to significant encroachment on sensitive water catchment areas and in some instances to unregulated abstraction of water. Further, waste discharge (domestic, industrial, agricultural) is also not regulated resulting in poor water quality especially in the lower reaches of the river system. As the residual stream flows necessary to support aquatic biota has not been determined, it is possible that current abstractions may in some cases exceed that required for sustaining environmental quality.

6.1 *Natural Disaster Management*

The more pronounced impacts of natural disasters on the water sector have been linked mainly to extreme weather events such as hurricanes, droughts, and floods. Hurricane Lennie and Tropical Storm Debbie are examples of extreme weather events which induced flooding in low-lying areas, landslides, destruction of biodiversity, and crops and damage to social and economic infrastructure. Flooding resulted in large amounts of sediment and other pollutants being washed onto sensitive near-shore habitats, such as sea-grass beds and coral reefs. Several public sector agencies including the National Emergency Management Organisation (NEMO), WASCO and the Ministry of Communications, Works and Public Utilities have Disaster Management Plans in place. However, these plans have tended to focus mainly on post-disaster mitigation rather than on proactive measures to reduce the impacts of such disasters.

The evidence suggests that much of the damage to the water supply, experienced during and after extreme weather events, is caused, not by the events themselves but by weaknesses arising from the absence of an integrated approach to water resources management. The level of collaboration between the respective water resource management agencies is inadequate and ineffective in dealing with current risk levels and therefore cannot be expected to respond to future situations such as the spectre of more frequent, extreme events arising out of Global Climate Change (GCC), Sea Level Rise (SLR) and the consequent intensification of the global hydrological cycle, all of which can have major adverse impacts on water resources. It is predicted that changes in the total amount of precipitation and in its frequency and intensity, will directly affect the magnitude and timing of runoff and the intensity of floods and droughts.

The impacts of GCC will depend on the baseline condition of the water supply system and on the ability of water resource managers to respond, not only to Climate Change but also to population growth and changes in demands, technology and economic, social and legislative conditions.

In this regard, Saint Lucia stands to benefit from its participation in two regional, Global Environment Fund (GEF) projects which will provide technical and financial assistance to mitigate the potential impacts of climate change, namely: The Integrated Watershed and Coastal Area Management Project (IWCAM) and the Mainstreaming for Adaptation to Climate Change (MACC) Project.

7. CONCLUSIONS

The preceding situational analysis has highlighted several critical issues and concerns which can only be addressed by fundamental shifts in the governance arrangements for water resources management. The analysis suggests that Saint Lucia is facing a situation of water stress which will worsen if a business as usual approach should continue. The following findings and conclusions from the analysis will require urgent attention:

a) the average annual per capita availability of renewable water resources is expected to fall. Given the already unequal distribution of these resources, marginal groups especially in the rural areas will experience water stress;

b) the supply of water for health and sanitation especially in the rural areas is inadequate and demands priority attention ;

c) indiscriminate use of forest resources and encroachment upon protected areas is severely affecting the sustaina bility of water resources;

d) notwithstanding recent increases in the price of water services for food and agriculture, health and sanitation and industry, current prices are being heavily subsidised by Government with unintended, but perverse consequences;

e) Users still do not value water; water conservation technologies are still rudimentary and incentives for innovation are weak;

f) poor land use planning and soil management especially in and around watersheds is severely reducing freshwater capturing capacty, and is also affecting coastal water quality and aquatic biodiversity. Sedimentation and over-utilisation of chemicals for agriculture and industrial use, are deteriorating water quality and are posing significant risks to public health;

g) decision-support arrangements for water resources management, in particular, the institutional arrangements for monitoring, collection, research and evaluation of water related data and associated environmental conditions are poor and pose a serious threat to the emergence of a sound and effective IWRM programme;

h) human resource capacity in the water sector is weak especially in such critical areas as water and wastewater management, pollution control, finance, integrated water resource planning and the operation and maintenance of water-related infrastructure and services;

i) the absence of environmentally-sound and cost effective sewerage collection and treatment facilities threatens the integrity of the water supply and sustainability of water resources and supporting ecosystems;

j) increasing the productivity of agriculture through expanded irrigation could accelerate water stress, if it is not buttressed by effective and timely technical and management measures to improve the productivity of irrigated water, including the use of better agronomic practices;

k) notwithstanding recent attempts at centralizing the management of water resources, considerable fragmentation exists among a multiplicity of institutions whose mandates and activities impact the water resource;

l) by itself, a system of licenses is insufficient to permit the NWSC to effectively allocate available water resources among competing uses; m)for the purposes of transparency and objectivity, the responsibility for allocation of water resources should be divorced from responsibility for monitoring, enforcement and compliance in water-related issues.

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THE POLICY

8 INTRODUCTION

The findings and conclusions from the Situational Analysis contained in Part One of this document, confirm that the way the island's freshwater resources are managed is far from ideal. Government accepts that to ensure the sustainability of freshwater resources, it must be viewed holistically, and managed in a way that balances competing demands on it, whether domestic, agricultural, industrial and environmental. Sustainable management of water resources requires systemic, integrated decision-making that recognizes that:

a) there is a direct relationship between the use of land for domestic, commercial, industrial or agricultural purposes, the
generation of waste by these uses and the impact on the quality of freshwater resources;
b) that decisions on water also affect the environment and land use;
c) decision's about Saint Lucia's economic and social future, currently sectoral and fragmented, affect hydrology and the ecosystems

Consistent with its belief in joint ownership of the process of change, the Government has sought to ensure the widest possible participation of key stakeholders both within and without the Government in the formulation that this Policy.

The Policy seeks to promote the concept of freshwater as a socially-vital, economic good that requires a coordinated and participatory management approach to sustain economic growth and to reduce poverty. It also acknowledges the importance of balancing water uses with the requirements of the many interrelationships within the ecosystem. The Policy stresses that Government action is not enough and that the people of Saint Lucia must become aware of the true value of water in their daily lives and use it wisely.

In the implementation of this Policy, the following four key challenges to the sustainability of water resources management have been identified:

1. Financial Sustainability - mobilizing enough money for capital investment to reach all the currently under-served people and to cover operation, maintenance and eventual replacement;
2. Institutional Sustainability - building the capacity of water resource management institutions and maintaining effective relationships between the relevant public authorities, the private sector and civil society;
3. Operational Sustainability - reversing the downward spiral by pricing water services to recover full costs and investing the capital raised in operation and maintenance to provide better service standards
4. Technical Sustainability - exploring a range of alternative options and adapting solutions to be more appropriate to the strength of the economy and to the needs of the people and are also amenable to affordable management and maintenance

8.1 *The Overall Vision*

The Policy is driven by a vision of a future in which all users of water resources understand and appreciate the value of water as a fragile, finite and essential resource and are sufficiently empowered whether individually or collectively, to perform their respective roles in ensuring access to a safe, secure, adequate, and affordable supply of freshwater.

8.2 *Long Term Goal of the Policy*

The goal of the Policy is to sustain economic growth, human development and environmental sustainability by promoting and facilitating the use and management of freshwater resources in an efficient sustainable and equitable manner that is consistent with the social, economic and environmental needs of current and future generations as well as with the country's international obligations.

8.3 *Objectives of the Policy*

The specific objectives of the Policy are as follows:

a) to foster the adoption of an integrated approach to the management of water resources;
b) to enable people to lead healthier and more productive lives through improved management of water resources and increased and sustained access to water supply and sanitation and water-based services;
c) to increase and sustain the contribution made by water resources to the development of the agriculture and food sector;
d) to increase and sustain the contribution made by water resources to the development of the industrial sector;
e) to increase and sustain the contribution made by water resources to environmental sustainability and the conservation of biological diversity;
f) to ensure efficient and equitable allocation of water among competing uses

8. 4 *Guiding Principles*

The following principles will guide the pursuit of the objectives of this policy:

a) freshwater is a fragile, finite and vulnerable resource essential to sustaining life, economic competitiveness, human development and the environment;
b) all water in the water cycle whether on land, underground, or in surface channels, falling on, flowing through or infiltrating such systems, will be treated as part of the common resource and to the extent required to meet the broad objectives of this policy, will be subject to common management approaches;
c) only that water required to meet basic human needs and maintain environmental sustainability will be guaranteed as a right; all other water uses will be recognised only if they are in the public interest and will be subjected to a system of allocation which is optimal for the achievement of equitable and sustainable economic and social development;
d) water has an economic and social value in all its competing uses and must be recognised as an economic good; water development and management will be based on a participatory approach involving users, planners and policy makers at all levels;
e) putting people at the centre of water policies involves recognising their right to enjoy healthier and more productive lives and to participate in water resources management;
f) putting users at the centre of water services leads to the need to respond to demand;
g) women have a central role to play in the provision, management and safeguarding of water;
h) the ideal approach to water resources management is one that is demand-driven rather than supply driven;
i) water should be priced in such a way as to encourage judicious use and to generate the money needed to maintain water services;
j) prices that accurately reflect water's economic or scarcity value enable consumers' choices regarding water consumption and use;
k) investments in the water sector should balance economic development with poverty alleviation and improvement in public health;

9. BUILDING CAPACITY FOR INTEGRATED WATER RESOURCES MANAGEMENT

9.1 *Basis for Action*

Government is conscious of the myriad problems which have emerged out of a fragmented and compartmentalised approach to water resources management. Government accepts that the water cycle cannot be divided into tiny conceptual and managerial parts, where freshwater management is considered separately from land management; groundwater from surface water and freshwater supplies from aquatic ecosystems. Further, Government has noted the paucity of reliable information on water use and availability and the lack of capacity within water resource management institutions.

a) 2004, a mechanism will have been established to coordinate the management of water resources in an effective and integrated manner;
b) 2005, comprehensive policies and strategies for IWRM will have been adopted and in the process of implementation;
c) 2007, the efficiency of water supply and use will have increased by at least 30% over 2003 levels.

9.3 *Guiding Principles*

In pursuing this vision, Government will be guided by the following principles:

a) effective use of water resources and the provision of appropriate service levels is best facilitated by the participation of beneficiaries at all relevant stages of planning and implementation and management of operation and maintenance.

b) the needs of the poor must be given priority in the allocation of water.

c) emphasis must be placed on the efficient use of water, including measures to: promote conservation and supply augmentation (such as rainwater harvesting and effective management of demand; promote the use of appropriate technology and strengthen the security of water resources;

d) to promote the efficient use of water the policy will be to charge users the full financial costs of providing access to water, including infrastructure development and catchment management activities;

9.4 *Objectives*

The objectives of this component of the Policy are as follows:

a) to foster the integrated management of water resources;

b) to strengthen the human resource capacity and improve the efficiency and effectiveness of water resource management agencies;

c) to promote effective water pollution prevention and control;

d) to improve the information base for sustainable water resources management;

e) to engender the appropriate changes in cultures and in the perception and attitudes of users of water resources;

f) to establish effective and efficient mechanisms for allocating water among competing uses; and,

g) to reduce the negative impacts of water-related disasters on the society, the economy and the environment and to reduce the impact of natural disasters on the water sector.

9.5.1 *Promoting Integrated Water Resources Management*

Government is fully committed to the principles, approaches and processes of IWRM which seeks to promote the coordinated development of water, land and related resources in order to maximise equitable economic and social welfare, while maintaining environmental sustainability. Government embraces IWRM as a basis for sustaining the involvement of all stakeholders in the management of water, in all its aspects and interactions. Government will urgently explore the possibility of establishing an institutional mechanism for coordinating national and community-based agencies with responsibilities for water and land. It is envisaged that such a mechanism will have the ability to:

a) formulate and implement water policy including limitations on use of ground and surface water resources and allocations for health and sanitation, agriculture, industry and habitat for aquatic life;
b) decide on interventions to be carried out within the water sector and coordinate the monitoring of their use and effectiveness;
c) assist in the development and enforcement of national water quality standards;
d) monitor water quality and quantity;
e) liaise with all agencies dealing with natural resources management related to water;
f) design and implement an overall strategy for the sustainable use of water resources and prepare action programmes that consider existing institutional, financial and physical constraints and options;
g) provide for public participation in the formulation of policies and strategies;
h) provide for the use of facilitation, mediation, assisted negotiations and other techniques of alternative dispute resolution to better manage competition among uses;
i) review legislation and regulations governing the water sector and monitor their enforcement;
j) establish the legal basis for the issuance and enforcement of permits for water abstraction;
k) design and deliver public education and awareness programmes on water resources management issues.

Responsibility for developing and monitoring standards relating to water quality will continue to be discharged by the Bureau of Standards.

9.5.2. *Strengthening Human Resource Capacity.*

Government is seized of the need to build the human resource capacity of water resource management institutions. These institutions will be encouraged to strengthen their human resource management (HRM) policies and practices so as to ensure that current and future personnel are exposed to formal and informal training, in IWRM. A priority target group for such training would be water managers, who should be exposed to training in such areas as environmental impact assessment, conflict resolution, institutional design, policy design, information management and designing and implementing participatory and gender sensitivity processes. Government will use its influence to encourage national and regional educational institutions to provide programmes on IWRM and to design and implement water-based strategies for sustainable land use. The Ministry of Education will be invited to consider incorporating locally relevant water management topics into pre-school, primary, secondary and tertiary level education.

9.5.3 *Promoting Effective, Water Pollution Prevention and Control*

Priority attention will be given to the design and adoption of measures to prevent and control the pollution of water resources and their supporting ecosystems from negative impacts of development, resource exploitation and natural processes. At the institutional level, the focus will be on building the requisite regulatory capacity, including the development of a legislative framework that outlines appropriate preventive and corrective measures. In addition, attention will be given to the following:

a) strengthening enforcement agencies, community-based organizations and relevant stakeholder groups;
b) protecting public health against disease vectors and from pathogens;

The management of water resources requires adequate, reliable and representative data. Government believes that if water users are to change their attitudes and practices, they will need appropriate information and advice. Government will support research and training initiatives aimed at strengthening national efforts to promote the sustainable use of water resources. Priority will be given to the following needs:

a) determining the economic value of water resources and ecosystems;
b) estimating water availability, use and loss;
c) monitoring and evaluating policies and procedures to strengthen the integration and management of water and land uses, manage water demand and promote sustainable use of aquatic resources;
d) conducting sustained assessments of climate and hydrological trends;
e) ensuring the accuracy and integrity of primary data on the state of water resources, including through closer scrutiny and maintenance of recording instruments;
f) promoting closer working relations between sector institutions and data exchange representing either impacts on water resources or use of water resources;
g) undertaking regular analyses of socio-economic aspects of water use and availability, including user behaviour, the potential effects of demand management, urban growth and changing land use patterns.

9.5.5 *Fostering Appropriate Cultural and Attitudinal Change*

Recognizing that achieving IWRM will require changes of deep-seated cultures and values in individuals, institutions, professionals and social organisations, campaigns to persuade water users to adapt their behaviour towards water and to recognize that water is neither limitless nor free. In designing these programmes, the knowledge and perceptions of key target groups will be used. Key points will include:

a) creating a basic understanding of the water cycle (where it comes from and where it goes), through teaching in schools and colleges and via the media;
b) promoting awareness of the water cycle and water use implications among decision makers;
c) explaining the need for everybody to protect against water pollution;
d) improving public awareness of watersheds and aquatic ecosystems and the ways in which these resources can be used in a sustainable manner;
e) providing decision-makers with syntheses of the best available scientific data so that they understand interactions among water uses and users;
f) facilitating broad stakeholder participation in water planning and operating decisions;
g) promoting the development of self-regulating water institutions;
h) increasing the willingness of users to pay or contribute to water services;
i) awareness for planning for emergencies.

9.5.6 *Establishing Equitable and Efficient Allocation and Pricing Mechanisms*

Government believes that a well-defined allocation strategy would serve to address many of the conflicts in management of water resources. Government's view is that allocation of water must be married with efficient water use and that efficiency can best be assured by: (a) charging the full cost of water, including the cost of building and operating water supply systems; (b) reducing losses in distribution; and (c) protecting forests, watersheds and other ecosystems required to regulate and maintain water quality. Government will apply a combination of appropriate administrative and economic instruments, including tariffs that are affordable, acceptable and administratively feasible. In setting these tariffs, Government will seek to ensure that the poor and other disadvantaged groups are not harmed. For those groups engaged in productive activities, such as agriculture, some of the charges may be waived for a determined period, in emergency situations. All major water user sectors will be required to develop a water use, conservation and protection policy and regulations will be introduced to ensure compliance with the policy in key areas.

Economic incentives will be applied to encourage the use of water conservation and storage technologies. Recognising that water use is determined not only by its own price, but also by the prices of goods and services that consume water, Government will consider the implementation of a balanced programme of reforms to correct price distortions in agriculture, industry and other areas that affect water. Current administrative and market-based mechanisms for allocating water resources will be expanded based on the following basic allocation criteria:

a) Historical water rights
b) Availability of water
c) Effects on existing sources and downstream users
d) Water quality
e) Economic considerations
f) Efficiency of use
g) Protection of the supporting ecology and ecosystems
h) Investments made by the user in providing infrastructure

The National Water and Sewerage Commission (NWSC) will be charged with responsibility for designing and operating a system in which conflicts between water users are resolved in a manner that ensures that water resources are used as efficiently and economically as possible. In line with this, a fee system will be developed to control access to and use of ground and surface water. These fees will include the following:

a) a fee to process applications from persons seeking to access the water resources;
b) an abstraction charge sufficient to recover the Commission's cost in performing its water resources management functions;
c) a fee to cover monitoring and other administrative costs of the Commission; and
d) a catchment management charge.

The management of public facilities and standpipes will be devolved to Local Government Authorities. Formal agreements will be established with respect to the level of charges and quality of services in accordance with local demand. A system of cross subsidies will be considered as a means of reducing prices for the poorer groups.

In the short term, Government will pursue prioritized investments to break the cycle of inadequate income and poor service and to build management capacity at the central and local levels. Investments will target priority needs and reactivate under-utilised systems. At the same time, a long term investment plan will be prepared to coordinate sector activities at both the community and national levels, with investments in the economic and social sectors. A related programme will also lidentify sources of finance for these investments and will explore the creation of development funds.

Cost recovery mechanisms will be used to ensure that the direct beneficiary pays and that the supply of service can be maintained. A regulatory regime will be developed to ensure that only efficient cost levels are recovered from consumers. Licensed operators will continue to recover operating costs through tariffs. Where necessary to achieve social objectives, the Government will provide subsidies equal to the tariff, fees and charges otherwise payable by the consumer for "social water". Recovery of these costs is fundamental to the sustained viability of the entity providing the service.

The Government intends that the sector is able to access a wide range of sources of finance in the future. These sources will include:

1. Charges levied on consumers in addition to the tariff to fund new projects from which they will benefit;

2. Finance provided by the private sector where feasible;

3. Government grants for specific works with high social or environmental value.

Developers of new housing developments and/or developers of off-site infrastructure that benefit a new housing development, industrial park or residence shall be required to provide all water infrastructure and to recover these costs from the price of housing units.

Having regard to the administrative implications of applying the above approach to funding and cost recovery with respect to major projects, the areas requiring attention shall be identified and the appropriate funding and method of cost recovery prescribed ahead of time. Private sector involvement in sourcing the necessary funds and carrying out the project may then be solicited.

The amount chargeable for the public supply of water and wastewater services for domestic or industrial use may include the following features:

4. A lifeline rate full cost recovery

5. Differential tariffs depending on the areas served

The objective shall be to reflect in the tariff the cost of providing the service, while also taking into account social considerations where appropriate.

The NWSC will be responsible for setting tariffs at a level which allows the licensed operators to fully recover efficient cost levels (including both capital and operating costs). The licensed operators will be responsible for increasing the efficiency of their operations, and thus reducing costs to the lowest efficient levels. Where exceptional circumstances dictate the need for additional funds for Systems improvements or rehabilitation, the NWSC will take this into account in setting tariffs.

10. WATER FOR HEALTH AND SANITATION

10. 1 *Basis for Action*

Government is of the firm belief, that in addition to being a basic human right, universal access to a safe, water supply and appropriate sanitation can also increase economic well-being and contribute to human development by providing real personal benefits in the form of greater privacy, convenience, safety and dignity - all important aspects especially for women and children. Further, bringing water and sanitation to households and communities can reduce the time and energy that is lost in fetching water from long distances and from illness from water borne diseases, and allow the time saved to be applied to economically productive and educational activities.

The commitments made by Government in this part of the policy, are consistent with commitments made in regional and international treaties such as:

a) The UN Convention on the Rights of the Child (1989) which obligates states party to take measures to combat disease and malnutrition among children, through inter alia, providing adequate nutritious foods and clean drinking water, taking into consideration the dangers and risks of environmental pollution;
b) The 1972 Stockholm Declaration ;
c) Agenda 21;
d) The Cartagena Convention;
e) The Caribbean Cooperation in Health Initiative (CCH2) which obligates CARICOM states to implement programmes to improve environmental health.

10. 2 *The Vision*

Government's vision is that by:

a) the year 2005, the proportion of people who are unable to reach or afford safe drinking water will have been reduced by 50%;
b) the year 2005, the proportion of people not having access to hygienic sanitation facilities will have been reduced by 50%;
c) the year 2003, appropriate standards for the construction of sanitary facilities will have been developed and applied;

d) the year 2010, at least 40% of homes in the main urban centres will have been connected to an environmentally acceptable and cost effective sewerage treatment system;
e) the year 2010, at least 10% of the water supply and sanitation services will have been owned and managed by the private sector.

10. 3 *Guiding Principles*

In pursuing this vision, Government will be guided by the following principles:

a) in allocating water use, priority must be given to the health and sanitation needs, especially of the poor and disadvantaged groups.
b) minimum standards and levels of service for the public supply of potable water must be ensured.
c) a priority for investment must be to secure improvements in sewerage treatment and disposal, in order to protect human health and the environment.
d) improvements in the quality of urban drainage, both in its initial provision and its maintenance, must be assured.
e) the satisfaction of basic needs will require an increased coverage of water supply and sanitation, particularly to rural, low income groups.

10.4 *Strategic Objectives*

The strategic objectives in the provision of water for health and sanitation are as follows:

a) to ensure the availability of minimum necessary quantities of potable water and minimum standards of sanitation service to all, in a cost-effective and efficient manner and with due regard to health and environmental considerations;
b) to ensure a sustained flow of financing for the provision and maintenance of water and sanitation services;
c) to strengthen institutional capacity for monitoring, surveillance and management of water supplies and treatment facilities;
d) to increase private sector participation in the provision and maintenance of water supply and sanitation services.

10.5 *The Strategic Response*

10.5.1 *Ensuring adequate water supply and sanitation services*

The main role of Government in this respect will be one of setting priorities, direction, definition of minimum levels of service and the stimulation and regulation of the activities of the service providers. As a means of reducing poverty, Government will concentrate its efforts on improving the management and allocation of water resources and access to water and sanitation and on achieving improved health and sustainable livelihoods for the poor. In addition, Government will:

a) develop a Sanitation and Environment Master Plan summarizing the conditions in the major population centres and establish a plan to resolve the major problems;
b) plan for expansion of the sewerage network in areas with high population densities, having regard to health, environmental and economic considerations;
c) reduce harmful effects of wastewater on the environment through improved drainage and the promotion of measures to put wastewater to beneficial use where this is economically and financially feasible;
d) strengthen the capacity of enforcement and regulatory agencies;
e) establish or strengthen where appropriate, specific programmes, laws, policies and regulations to protect public health by ensuing access to water supplies that are free from bacteria, heavy metals and chemical contaminants that are harmful to human health;
f) provide support for accountable and autonomous service providers, private sector participation and public-private partnerships,
emphasizing equity in access to water for the poor and under-served;

g) implement tariffs which enable access to a minimum quantity of safe water for poor people, including packages that combine water use and resource management charges to cover costs, improved regulation and increased public awareness and provisions ;

h) promote research into best management practices in other jurisdictions, with a view to replicating such practices where feasible, within the local setting;

10.5.2 *Financing the Provision and Maintenance of Water and Sanitation Services*

Government subscribes to the view that where there is no viable alternative, and in order to protect human and environmental health, minimal levels of water and sanitation services should be provided to meet basic human needs, irrespective of the citizen's ability to pay,. Government is aware that many rural customers rely on water sources such as storage tanks, standpipes and trucking, as well as piped water. These sources will be improved to provide at least the minimum standards necessary for the sustenance of life and good public health, at a price which rural customers can afford. The relevant agencies / communities will be required to:

a) define the minimum standards of service for social water;

b) determine the desirable minimum quantity of water based on the "lifeline quantum" concept;

c) determine the eligibility criteria for recipients/beneficiaries of social water

d) recommend the appropriate levels of service necessary for households;

e) determine, in consultation with the Ministry of Finance the appropriate mix of revenue sources to cover the cost of the recommended levels of social water. The following sources of revenue shall be considered:

1. tariffs and user fees;
2. cross-subsidies (this means some customers pay more than the cost of the service provided, so that other customers can receive service at below cost);
3. direct subsidies from the Government Budget.

The Poverty Reduction Fund and the Basic Needs Trust Fund will be required to play an integral role in supporting the provision of social water.

The NWSC shall have responsibility for the approval of fees and tariffs based on prescribed/agreed water quality and service quality standards, minimum standards of sewerage services coverage and other appropriate parameters. The licensed operators and the NWSC shall implement a public awareness campaign whenever tariffs are adjusted. This will include information on ways in which consumers can reduce bills through increased water conservation.

The NWSC, in collaboration with the Ministry of Health and the Bureau of Standards shall develop acceptable service standards for urban potable water and wastewater services provided to consumers. The NWSC will also develop the appropriate enforcement mechanisms and the necessary legal reforms.

0.5.3 *Strengthening Institutional Capacity for Monitoring, Surveillance and Management.*

Government anticipates that improvements in the provision of water and sanitation services will help to reduce the incidence of water-borne infectious and non-infectious diseases, usually linked to lack of access and low coverage of appropriate sanitary services. However, Government is conscious of the need to complement these improvements with measures to strengthen the capacity of water resources management and health institutions for monitoring, surveillance and management. These measures will include:

a) strengthening the laws to ensure effective monitoring of compliance by operators of water and sanitary facilities;

b) providing Environmental Health Officers and officers from other relevant agencies with adequate training and resources to monitor the efficiency and effectiveness of sewerage treatment facilities and to monitor the presence of contaminants in the public water supply;

c) ensuring that water and sewerage treatment facilities are managed by trained and/or certified operators;
d) developing an epidemiological surveillance system to inter alia, monitor trends of water-borne infectious diseases;
e) encourage the participation of members in monitoring and surveillance of water and sanitation services, through the provision and training and other incentives;
f) implement measures to prevent the disposal of solid, liquid and hazardous waste into the water supply;
g) establish and/or strengthen linkages among institutions involved in monitoring, surveillance and management of water resources.

10.5.4 *Increasing Private Sector Ownership and Participation*

Cognisant of the capital-intensive nature of the water supply and sanitation sector, Government is keen to relieve itself of the full burden of financing the sector, by encouraging private sector ownership and investment in new infrastructure and in the operation of water services. However, the Government shall continue to own and/or control (directly or through designated entities) the natural resources and existing infrastructure assets.

Government is aware that low population densities and low incomes reduce the viability of water and sewerage projects in rural areas and decrease the likelihood that the private sector will be willing to participate. In developing its recommendations on private participation, the Ministry with responsibility for Water, will be required to recommend ways in which rural consumers can benefit from private participation where appropriate. This may include requiring private operators to take responsibility for service provision in a designated area. Government may provide incentives to encourage private participation, which will benefit rural people. Where appropriate, Government will promote the involvement of co-operatives and small entrepreneurs in providing water and sanitation services.

Government will be prepared to consider a range of options for private sector participation including, service contracts, management contracts, leases, concessions, Build Own Operate and Transfer (BOOT) arrangements, and Rehabilitate Operate Transfer arrangements. The specific option to be used in any given instance will depend on the mix of objectives that the Government wishes to achieve at any given time. In addition, Government will encourage private sector initiatives to supply areas which currently do not have adequate service. Further, incentives will be given to private landowners wishing to develop water resources on their properties.

Privatization will be treated as one the strategies of Government to secure economic benefits and not as an end in itself. Emphasis will be placed on private sector participation that:

a) are in the country's best interest;

b) improves economic efficiency in the sector, in both operating performance and the use of capital investment;

c) brings technical and managerial expertise and new and appropriate technology into the sector and thus providing productivity improvements;

d) injects investment capital into the sector and/or access to private capital markets, thereby reducing public investment;

e) insulates the sector from short-term political intervention in utility operations and limitation of opportunities for intervention by powerful interest groups;

f) transfers the risks and responsibilities of ownership from Government to the private sector over the long term;

g) delivers a reliable and efficient service to communities throughout the island;

h) makes the sector more responsive to consumers' needs and preferences.

11. *WATER FOR AGRICULTURE AND FOOD*

It is generally accepted that water used for food production brings several benefits. At the national level, increased food production can boost food security and in the process generate and conserve foreign exchange. At the household and community levels, water for food production can improve poor people's livelihoods and economic well-being. At the individual level, food security improves health by improving nutrition and hence the individual's ability to recover from diseases.

For these reasons, Government is keen to increase production in the agriculture sector, especially in the vital banana industry. To this end, Government is poised to expand the area of agricultural land under irrigation. Further, Government is pursuing an agricultural diversification programme, including livestock production and freshwater aquaculture, both of which will increase the demand for water. Mindful that the rate of expansion of irrigated land is the most important determinant of water stress, Government is keen to ensure that the focus of water policies in the agriculture and food sector aims at increasing the productivity of water.

11.2 *The Vision*

Government's vision is that water productivity for food production from rain-fed and irrigated farming will have increased by 25% by 2008.

11.3 *Guiding Principles*

In pursuing this vision, Government will be guided by the following principles:

a) the more food that is produced with the same amount of water, the less the need for infrastructure development, the less the competition for water, the greater the food security and the more water that is available for household and industrial use;

b) the control of water for agriculture can boost the yield of the main wet-season crops and enable the timing of production to match market demands.

11.4 *Objectives*

The objectives for the provision of water for agriculture and food are:

a) to increase food production by providing access to water:
   - in a cost effective and efficient manner;
   - at a price which takes into consideration the opportunity cost of the commodity produced as well as the social dimension of agriculture to reflect the real value of the sector;
   - with due regard to availability both in terms of quantity and quality;
   - using approaches which encourage stakeholder involvement.

b) to encourage implementation of measures to ensure conservation and sustainability by providers and consumers of water;

c) to promote effective research that can boost the productivity of water for food and agriculture production;

d) to mobilize additional sources of funding and investment support, introducing cost recovery mechanisms;

11.5 The Strategic Response

11.5.1 *Increasing Productivity of Water*

The following policies and strategies will be employed to increase the productivity of water:

a) improving crop varieties through plant breeding, aided by biotechnology, that produces more drought-tolerant varieties or varieties of crops that yield more mass per unit of water consumed;
b) switching to crops that:
    1. consume less water;
    2. tolerate poorer quality water;
    3. generate higher economic or physical productivity per unit of transpiration;
c) promoting better production and soil management techniques, fertilization and pest and weed control so as to increase the productivity of land and reduce the amount of water that is consumed;
d) improving irrigation water management through better timing of water supplies to help reduce stress at critical crop growth periods;
e) using more efficient, supplemental and precision irrigation;
f) promoting wastewater use
g) encouraging improved farming practices and techniques that increase water intake after rainfall and improve the retention capacity of water;

11.5.2 *Promoting Water and Ecosystem Conservation*

The increased demand for water for food and rural development will have to be met by storing water for later use with lower economic, social and environmental costs. To this end, Government will promote a mix of large and small dams as well as traditional storage and management techniques and rainwater harvesting. Research into alternative sources of freshwater including the use of non-traditional sources of water will also be encouraged.

measures will be introduced to restrict the use of fertilizers, pesticides and other chemicals on farms located in the vicinity of watersheds and water intakes. Farmers and local communities will be encouraged to play active roles in catchment maintenance, especially erosion control, water quality and biodiversity conservation. To support these initiatives, strategic or unique natural ecosystems will be highly valued and conservation measures that reflect the needs and involvement of the local communities will be designed and implemented. This will include measures to: (a) ensure that adequate water is available to meet ecosystem requirements; (b) restore and/or rehabilitate ecosystems; (c) minimize siltation from land use activities; and (d) acquire lands in or around water catchments and other sensitive areas.

11.5.3 *Promoting Effective Research*

The achievement of the vision for water for food and agriculture will require substantial investment and support in research capacity. Government will actively seek to increase overall support for research on land and water use so as to ensure that a diverse set of user knowledge is integrated into the research activities and that the results are useful to a wide range of users. Further, Government will as a matter of priority, seek to identify all existing and potential sources of water.

11.6 *Institutional Responsibilities in Water for Agriculture and Food*

Government is committed to the establishment of a service-oriented approach to management that focuses on making managers responsive to user needs. Within the agriculture and food sector, this approach may entail service agreements between farmers and water managers that describe the services to be provided; inter alia payment in return for services; verification of service provision; the consequences for both parties for failing to comply with the terms of agreements; and the rules for arbitration of conflict.

The Ministry with responsibility for Water and the Ministry of Agriculture, shall jointly determine the responsibilities of those institutions charged with ensuring an adequate water supply for agriculture and food. Government will examine the feasibility of delegating responsibility for irrigation and other related water management systems to Water Users Associations (WUAs) composed of the farmers who stand to benefit most from such systems.

11. 7 *Financing and Cost Recovery for Water for Agriculture and Food*

To ensure that irrigation and other water management systems are financially-viable, the operations and maintenance costs of existing systems should be met from charges paid by the users of those systems. This policy objective will be phased in within 5 years. In the case of new systems to be constructed under any national irrigation and water management development plan, users will also be required to pay a reasonable proportion of the capital costs. The proportion of the cost which will be carried by users, will depend on the ability of the users to pay, and will be decided on a case by case basis.

In addition, Government will promote:

a) the achievement of cost-efficiencies;
b) mobilization of additional sources of funding and investment support from the private sector and external sources;
c) the introduction of cost recovery mechanisms to ensure that the direct beneficiary pays and that the supply of services can be maintained and expanded.

11.8 *Emergency Assistance in Water for Agriculture and Food*

Government accepts that given the critical contribution of water to food production and by extension to social and economic stability, it may be necessary to provide short-term assistance to farmers to help them overcome the impact of disruptions in the production cycle.

The following agencies will determine the circumstances under which such assistance shall be provided to farmers and define the minimum standards of service for water for agriculture and food that will apply in such cases and to advise on the appropriate mix of revenue sources to cover the cost:

a) NWSC

b) The Ministry responsible for Public Utilities

c) Ministry responsible for Social Transformation

d) Ministry of Agriculture

e) Water Users Associations

f) Ministry of Finance.

11. 9 *Ownership and Private Participation in Water for Agriculture and Food*

It is envisaged that the current practice for servicing water needs for agriculture and food will continue. The intention is that private sector and co-operative involvement in public irrigation and water management systems will be facilitated through groups or associations which could function as legal entities (e.g. co-operatives or limited liability companies) where this is deemed the best model for any particular system. The membership of these Associations will be drawn from among farmers.

The activities of the Services and Manufacturing industries have important relationships with the environment and natural resources. Hence, the owners and managers of these industries have critical roles to play in achieving the vision which drives this part of the policy. While Government is pleased to note the growing environmental awareness being demonstrated by many industrial establishments, the evidence indicates that the situation remains highly unsatisfactory with many industries still contributing significantly to the impairment of water resources and the ecosystems which support them.

12. 2 *The Vision*

Government's vision is that by:

a) the year 2004, emission standards for industry will have been developed and implemented;
b) the year 2004, at least 30% of industries will have developed and adopted corporate environmental policies that include water conservation and standards and systems for liquid waste management;
c) the year 2006, at least half of the hotels on the island will have implemented water reuse policies and practices.

12.3 *Guiding Principles*

The pursuit of the vision will be guided by the following key principles:

a) the Polluter Pays Principle[7]
b) the User Pays Principle[8]
c) the Precautionary Principle[9]
d) allowing industries to choose how they meet standards that promote efficiency and innovation.

12.4 *Strategic Objectives*

The objectives of this component of the Policy are as follows:

(a) to ensure the availability of a safe, reliable and affordable supply of water for use by industry; and;
(b) to reduce the negative environmental impacts of industry on water resources and supporting ecosystems.

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[7] This Principle stipulates that the polluter should bear the cost of any pollution and control measures which are necessary in order to ensure that the environment is in an acceptable state.

[8] This Principle calls upon the user of a natural resource to bear the cost of any draw-down of natural capital.

[9] According to the Precautionary Principle, critical environmental assets should be left intact, especially where there is uncertainty about the effects of human actions on these assets, but grounds for thinking that they may be substantial.

In line with the development objectives of the country, including the imperatives of international competitiveness, Government will ensure that water for industry in the context of Tourism, Commercial and Manufacturing sectors, is treated as an integral part of the water sector. Further, Government will seek to ensure that:

a) minimum standards/levels of service are met on a 24 hours per day, 7days per week basis;
b) the provision of water and sewerage services are directed at meeting the needs of areas targeted by the relevant industrial development policy, so as to have the maximum impact on economic growth and development;
c) coordination between the various institutions involved in the sub-sectors is improved.

Because processing and extractive industries are normally located in areas that relieve urban congestion, the capital and operating costs of supplying water and sewerage services to industries are likely to be high. Additionally, the remote location of these industries excludes the possibility of cross-subsidisation of costs. The general principles and approaches outlined in earlier sections regarding capital and operating cost recovery will be applied.

Government is aware that some hotels and manufacturing plants have installed or are considering installing Desalination Plants, to enhance their international competitiveness. While Government is fully committed to support the efforts of local businesses at competing effectively in the international marketplace, Government is also concerned to ensure that the use of Desalination Plants does not affect the effectiveness, viability and sustainability of its interventions in the water sector. Except in emergency cases, or in cases where freshwater resources are exhausted or are in limited supply, licenses will not be granted to applicants wishing to produce desalinated water for public consumption. Other applications will be considered on a case-by-case basis. In all cases, due consideration will be given to:

a) the strategic importance of the business;
b) the degree of reliability of its current source of freshwater;
c) the results of an Environmental Impact Assessment of the operations of the proposed Desalination Plant;
d) the production capacity of the proposed plant.

12.5.2. *Reducing the Negative Environmental Impacts of Industry*

A mix of regulation and voluntary compliance instruments will be used to achieve this objective including demand management, waste control and process and emission standards.

As with other groups of users, efforts will be focused on reducing the demand for water by industries. This approach will produce dual benefits as less water used will mean less wastewater eventually discharged into the receiving environment. Demand Management will be encouraged by sensitising industry managers to the ways in which water consumption can be reduced and the benefits to be derived therefrom. Industries will be encouraged through a system of incentives or through a combination of allocation mechanisms and punitive measures, to adopt demand management practices. As a condition of Planning Approval, hotels and industries may be required to implement a dual water supply system, involving separate lines for freshwater, for human consumption, (drinking, bathing and cooking) and recycled water for flushing toilets and watering lawns and golf courses. Strict standards will be developed and enforced in respect of the use of recycled water.

Consideration will be given to the use of incentives to encourage the use of appropriate water conservation, storage, wastewater treatment and recycling technologies.

Legislation is already in place, requiring Environmental Impact Assessments (EIA) for developments having known or potential, negative environmental impacts. The effects of these laws will be reviewed from time to time and will be strengthened when necessary. Further, the capacity of all resource management agencies will be strengthened to enable staff to effectively manage the EIA process, including the preparation of Terms of Reference and the evaluation of Scoping and EIA Statements. The capacity of the Ministry of Health and other relevant agencies will be strengthened to undertake Environmental Health Impact Assessments (EHIA) which will allow early identification of potential risks to human and environmental health from an existing or proposed development. The results of all EIAs and EHIAs will be made public.

Government will require periodic reports by industries on measures being implemented to protect and improve the environment, especially from those industries involving high environmental risks.

Emphasis will also be placed on monitoring and enforcement of standards regarding gaseous and effluent emissions from industries. As a condition of planning approval, hotels and industrial plants may be required to connect to municipal waste water treatment facilities, where such facilities are located in reasonably close proximity. Where municipal treatment facilities are not available, permission may be granted for the use of an appropriate on-site treatment facility, on condition that:

a) the facility is designed and built to the specifications of the Ministry of Health;
b) the facility complies with the effluent standards of the Ministry of Health or other relevant agencies;
c) the facility will be operated only by certified personnel;
d) adequate back up facilities are in place.

Where disposal by sea outfall cannot be avoided, the following rules will apply:

1. disposal will not be allowed in areas with possible human contact;
2. disposal will not be allowed in areas containing sensitive ecological systems and/or marine habitats that are likely to be affected;
3. disposal will only be allowed in areas where the prevailing currents are off-shore throughout the year;
4. disposal will only be allowed in areas where sufficient dispersion and dilution of effluent can take place;
5. disposal will only be allowed where outfalls can be anchored at a depth of at least 40 metres.

Measures will be implemented to ensure that the development of industry in general and the tourism industry in particular, does not exceed the carrying capacity of the island. While tourism does not harvest nature in the same way or to the same extent as extractive industries, the industry and its infrastructure of hotels, transport and other facilities is having a major impact on the environment. Government will work along with industry representatives and conservation groups to:

a) ensure that tourism is properly planned and regulated so as to control its impact on nature and maintain its resource base;
b) ensure that planning for tourism is integrated with other land-use planning activities, especially in respect of protected areas;
c) balance the various sub-sectors of tourism to: prevent environmental damage; locate the right development in the right place and increase the economic viability of both the industry and the local communities;
d) educate tourists and operators on their responsibilities regarding environmental conservation.

13. WATER FOR ENVIRONMENTAL SUSTAINABILITY

13.1 *Basis for Action*

Freshwater and the ecosystems that support it, play a critical role in environmental sustainability and in the regeneration of many ecological processes. Wetlands, and flood plains, in particular play a strong role in maintaining biodiversity and the functioning of the environment as a whole. Secondly, good sanitation and solid waste management reduce water pollution although complete protection of water quality also needs major improvements in industrial and agricultural pollution control. Thus, Government believes that protecting catchment basins and maintaining river flow is essential, if full benefit is to be obtained from the island's freshwater resources.

13.2 *The Vision*

Government's vision is that by 2005 standards will have been established to ensure the health of freshwater ecosystems.

13.3 *Guiding Principles*

In pursuing this vision, the following guiding principles will be observed:

a) the role of watershed ecosystems in regulating water quality and quantity and controlling the productivity of coastal and floodplain fisheries and agricultural and livestock production systems must be assessed and sustained.
b) the costs and benefits of protecting watershed forests, wetlands and other key ecosystems must be made an automatic component of irrigation and other water supply projects.
c) the interface between water bodies and the land should be protected.
d) priority attention must be given to rehabilitating critical ecosystems such as water catchments, including forests, rivers, wetlands and associated aquatic ecosystems that have been severely degraded or destroyed.
e) environmental sustainability and regeneration benefit everybody, especially the poor. Emphasis must be placed on the implementation of measures to restore and enhance the quality and quantity of usable water and protect the aquifers, watersheds and other sources of water.

13.4 *Strategic Objectives*

The objectives of this component of the policy are as follows:

a) to integrate the development of water resources with conservation of ecosystems that play a key role in the water cycle;
b) to mitigate the impacts of natural disasters on water resources;

13.5 *The Strategic Response*

13.5.1 *Integrating Development with Ecosystem Conservation*

Many of the policies and strategies outlined earlier should assist in protecting the health of water resources and the ecosystems that support them. Increased attention will be given to the management of water catchments, including through the strengthening of land-use planning agencies to design and implement effective land use plans and through the establishment of management regimes that control development activity within and in the vicinity of watersheds. These regimes will include the definition of drinking water protection zones, water permits and soil protection and erosion control measures. In addition, Government will seek to ensure that:

a) effective cooperation and coordination takes place between land use planners and water managers;
b) pollution from non-degradable substances does not exceed levels that would endanger human health or ecosystem function or the maintenance of ecosystem structure and functioning;
c) pollution by biodegradable substances does not exceed the assimilative capacity of receiving environment;
d) the use of toxic substances whose long term impact on human and ecosystem health is not known, is banned;
e) water for health and sanitation, agriculture and industry, as well as that required for the maintenance of ecosystems does not exceed the limits of sustainable supply, taking full account of the requirements for ecosystem functioning.

Priority attention will be given to the implementation of the National Biodiversity Action Plan (NBASP) and the Land Policy respectively.

Recognising the importance of sound and regular data to the effective management of ecosystems, Government will establish institutional mechanisms to ensure adequate data collection and monitoring systems to permit sound, decision-making. Efforts will also be directed at promoting sustained community participation in the management of water resources. The participatory water catchment management approach that was successfully piloted in the Talvan community will be replicated in other communities.

13.5.2 *Mitigating the Impacts of Natural Disasters*

As with other aspects of IWRM, an effective planning process that takes account of potential hazards and the vulnerability of people and ecosystems, to extreme events is critical to the success of any strategy that is aimed at reducing or managing risks. Consequently, Government will seek to build the capacity and capability of all relevant agencies to:

a) undertake risk assessments that can inform decisions on appropriate levels and mitigation strategies to deal with water related, natural and human induced hazards, such as resource scarcity, water quality, non-average climatic events, public health and ecosystem change;
b) analyze the nature and distribution of potential harms from water management policies and practices;
c) evaluate public perceptions of risk and risk mitigation priorities;
d) undertake flood and drought forecasting.

Government is aware of the several regional and international initiatives that seek to promote sustainable water management for present and future generations, by better mitigating the adverse impacts of Climate Variability and Climate Change. Government will give its fullest support to these initiatives and will also seek to engage key stakeholders in a process to build and disseminate reliable information and understanding, identify options and define strategies for adapting to Climate Variability and Climate Change.

14. IMPLEMENTING THE POLICY

It will be recalled that this Policy is based on the results of a situational analysis of the water sector. This fact dictates that the Policy be treated as a dynamic instrument in a dynamic environment. It also means that the institutional arrangements must be put in place to monitor the impact of the Policy, against the vision and objectives that have been set and to adjust the policy in the light of changes in the situation.

The policy has been influenced by, and strives to operationalise the principle of IWRM. While the Policy has been written from the perspective of Government, this does not discount the significant roles that must be played by diverse actors and agencies at the national and community levels. The role envisaged by these actors is summarized below.

4.1 *The Role of Government*

Government is perhaps, the most important actor in the water sector. Its principal task will be to provide an adequate political and legal environment; facilitate the provision of suitably supervised investment funds and encourage the participation of the private sector in the construction of improved water sources. Government will retain a certain capacity to intervene in areas where private participation is shown to be non-viable. More specifically, Government will be charged with:

a) providing leadership, coordination and coordination;
b) establishing effective public sector institutions with full accountability, representation and transparent decision-making;
c) establishing the institutional and other mechanisms for integrated water resources management;
d) incorporating IWRM in national strategies for sustainable development;
e) identifying research needs and the ways in which they may be met;
f) improving coordination among stakeholders;
g) promoting public education and awareness;
h) promoting participatory decision-making in IWRM;
i) using appropriate legal and financial instruments to balance economic development priorities with impacts on

k) reducing wasteful consumption of water by allocating water efficiently between competing sectors;
l) regulating the activities of water service providers;
m) providing an appropriate environment for private sector involvement in the water sector;
n) promoting the goals, objectives and strategies of the policy;
o) monitoring the implementation of the Policy;
p) managing natural hazards impacting the water supply;
q) improving emergency responses;
r) planning for prevention and mitigation of disasters related to floods and droughts;

14.2 *The Role of the Private Sector*

The dynamism of the private sector is seen as critical in accelerating the rate of implementation of the Policy and in establishing the close relationship between the quality of a water service and its financial viability. Consequently, the Policy envisages a more direct and involved role for the private sector, in assisting in the management and/or expansion of existing services provided by Government, through various approaches including contracting -out, management concessions and direct investment.

Private sector involvement will be promoted through a legal and policy environment defining roles and responsibilities and transparent processes for award of contracts to service providers. More specifically, the private sector will be expected to:

a) develop and implement corporate environmental policies that emphasize water conservation and guidelines for sustainable industrial processes;
b) define and action programme to define objectives for all personnel with guidelines on how they should be met;
c) observe the Polluter Pays Principle; the User Pays Principle and the Precautionary Principle respectively;
d) make informed investments in the water and sewerage sector.

14.3 *The Role of the Citizen*

In embracing the IWRM approach, the centrality of the citizen in helping to attain the objectives of the Policy is re-affirmed. The citizen is seen as playing a proactive role in articulating his or her needs in relation to their respective livelihood priorities. Such action will help to inform decisions regarding the allocation of water, as well as assist in improving water security and reducing risks and uncertainties. The citizen is also expected to take full responsibility for arming himself/herself with appropriate information to guide decisions whether at the individual or community level, regarding water resources management.

14.4 *The Role of Civil Society*

It is envisaged that civil society organisations will play a key role in helping consumers especially the poor, to express their demands, as well in advocacy. This will involve:

a) monitoring the responses of government and the private sector to the demands of consumers;
b) enabling the poor and other marginalized groups to determine their livelihoods, improve sustainable water resources and gain access to essential and appropriate services;
c) forming a communication channel from government to the people about choices of service level; about practical difficulties arising from the implementation of the policy; and the role of the different players, including government itself and the private sector ;
d) disseminating information and knowledge about new IWRM approaches, within communities;
e) assisting in monitoring the impact of the policy through indicators and monitoring systems;
f) assisting with assessments of water quality and the health of freshwater ecosystems.

4.5 *The Role of the International Development Community*

In recent times, the international development community has demonstrated a growing commitment to help Saint Lucia to address its water and sanitation needs. It is envisaged that the Water Sector Policy will help to strengthen the involvement of the international development community in the management of the water sector, by providing a clear and predictable environment in which the coordinated interventions of the international community can be made and received. More specifically, the international development community will be invited to assist in:

a) supporting good practice and providing guidance to the private sector on efficient and sustainable service provision;
b) providing financial and technical assistance;
c) assisting the public sector to compile and disseminate accurate information about water and sanitation services;
d) supporting the institutions that provide training and education for water resource managers;
e) encouraging the growth of the indigenous private sector;
f) sharing more effectively, the existing knowledge that can contribute to meeting the various water challenges.

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Stanley Associates Engineering Ltd. and Klohn Leonoff Ltd.: *Roseau Basin Water Development Programme, Stage 1 Feasibility Report* - CIDA Project No. 868/11547 - May 1998.

Stantec Consulting International Ltd. - Water and Sewerage Company INC. St. Lucia : *Distribution Network Assessment and Project Prioritisation Pre-Implementation Studies- Final*

PROGRAM	SPECIFIC ACTIVITIES
1. Promoting Integrated Water Resources Management	a) Develop and implement basic structures and functions for an effective water resources management and regulatory organization. b) Establish institutional organizational and administrative arrangements to facilitate effective enforcement of policy & legislation. c) Formulate, implement and review water policy. d) Undertake long-term planning for the water sector. e) Coordinate and monitor interventions within the water sector. f) Assist in the development and enforcement of national water quality standards. g) Monitor water quality and quantity. h) Formalize linkages between and among stakeholders and liaise with all agencies dealing with natural resources management related to water. i) Design and implement an overall strategy for the sustainable use of water resources. j) Prepare action plans & programmes that consider existing institutional, financial, social, economic and physical constraints and options. k) Provide for public participation in the formulation and implementation of policies and strategies. l) Provide for the use of facilitation, mediation, assisted negotiations and other techniques of alternative dispute resolution to better manage competition among users. m) Review legislation and regulations governing the water sector and monitor their enforcement. n) Implement research and development programs (water quality/quantity monitoring, forecasting technology. o) Establish the legal basis for the issuance and enforcement of permits for water management (abstraction, use, disposal etc.). p) Realign national standards and guidelines in the context of national legislation and commitment to relevant international conventions, treaties, accords etc.
2. Promoting effective, water pollution prevention and control interventions	a) Design and adopt measures to prevent and control the pollution of water resources and their supporting ecosystems. b) Build the requisite regulatory capacity, including the development of a legislative framework outlining appropriate preventive and corrective measures such as the polluter-pays principle. c) Strengthening of enforcement agencies, CBOs and relevant stakeholder groups (mechanisms, structures, information communication systems, education and training water management indicators, etc.).
3. Improving the water resources information base	a) Monitor water quality and quantity. b) Promote and coordinate research. c) Evaluation the total economic value of the resources and aquatic ecosystems or watersheds. d) Estimate water availability, use and loss (forecasting included). e) Sustained assessments of climate and hydrological data. f) Ensure the accuracy and integrity of primary data on the state of water resources, including through scrutiny and maintenance of recording instruments. g) Develop comprehensive Decision Support Systems (DSS) based on

	reliable information & technology to support data exchange representing either impacts on water resources or use and availability of water resources. h) Undertake analyses socio-economic aspects, including user behaviour, elasticity of demand, the potential effects of demand management, urban growth and changing land use patterns.
4. Establishing Equitable, Efficient Allocation and Pricing Mechanisms	a) Promote self-regulating water institutions. b) Foster the willingness of users to pay or contribute to water services c) Promote and implement equitable, efficient allocation and pricing mechanisms for water. d) Implement a balanced programme of reforms to correct price distortions in agriculture, industry and other areas that affect water. e) Design and manage a conflict resolution mechanism for water users to ensure that the water resources are used as efficiently and economically as possible. f) Develop a pricing mechanism for access to and use of ground and surface water. g) Set tariffs at a level that allows the licensed operator to fully recover efficient cost levels (including both capital and operating costs). h) Approve fees and tariffs based on the prescribed/agreed water quality and service, quality standards, minimum standards of sewerage services coverage and other appropriate parameters.
5. Ensuring adequate water supply and sanitation services	a) Develop appropriate development planning to ensure access to water and sewerage services. b) Provide for expansion of the sewerage network in areas with high population densities, having regard to health, environmental and economic considerations. c) Establish or strengthen where appropriate, specific programmes, laws, policies and regulations to protect public health by ensuring access to water supplies that are free from bacteria, heavy metals and chemical contaminants that are harmful to human health. d) Provide support for accountable and autonomous service providers, private sector participation and public-private partnerships, emphasizing equity in access to water for the poor and under-served. e) Implement tariffs that enable access to a minimum quantity of safe water for poor people, including packages that combine water use and resource management charges to cover costs, improved regulation and increased public awareness and provisions to ensure that the poor are not excluded. f) Improve operation and maintenance by setting goals and indicators and monitoring achievements. g) Institute mechanisms in management that will focus on service-oriented management. h) Promote research into best management practices in other jurisdictions, with a view to replicating such practices where feasible, within the local setting. i) Manage public facilities.
6. Strengthening institutional capacity for monitoring, surveillance and	a) Strengthen laws to ensure effective monitoring of compliance by operators of water and sanitary facilities to stipulated standards. b) Provide Environmental Health Officers and officers of other relevant agencies, with adequate training and resources to monitor the efficiency and effectiveness of sewerage treatment facilities.

management	c) Ensure that water, sewerage and waste water treatment facilities are managed by trained and/or certified operators. d) Develop an epidemiological surveillance system to inter alia, monitor trends of water-borne infectious diseases. e) Develop a surveillance system to monitor other contaminants present in the water supply. f) Train community members to undertake monitoring, surveillance and management of water and sanitation services. g) Implement measures to ensure adequate treatment of solid, liquid and hazardous waste into the water supply. h) Strengthen / formalize institutional linkages to coordinate monitoring efforts. i) Strengthen capacity of agencies to administer specific programmes. j) Establish plumbing standards and ensure capacity for monitoring compliance to plumbing inspectorate.
7. Finance the provision and maintenance of water and sanitation services	a) Define the minimum standards of service for social water. b) Determine the desirable minimum quantity of water based on the "lifeline quantum" concept. c) Determine the eligibility criteria for recipients/beneficiaries of social water. d) Recommend the appropriate levels of service necessary for households. e) Determine in consultation with the Ministry of Finance the appropriate mix of revenue sources to cover the cost of the recommended levels of social water. f) Strengthen capacity in water sector for fiscal management.
8. Private Sector Ownership & participation	a) Offer terms for private sector partnership that are in the country's best interest. b) Establish legal guidelines/framework, codes of conduct/contractual arrangements for private sector participation (e.g. infrastructural transfer). c) Improve economic efficiency in the sector, in both operating performance and the use of capital investment. d) Bring technical and managerial expertise and new appropriate and sustainable technology into the sector and thus providing productivity improvements. e) Inject investment capital into the sector and/or access to private capital markets, thereby reducing public investment. f) Insulate the sector from short-term political intervention in utility operations and limitation of opportunities for intervention by powerful interest groups. g) Transfer the risks and responsibilities of management from Government to the private sector over the long term. h) Deliver a reliable and efficient service to communities throughout the island. i) Make the sector more responsive to consumers' needs and preferences.
9. Promoting water and ecosystem conservation	a) Allocate and acquire where necessary areas for the conservation and protection of water supplies. b) Encourage technical innovation in supply augmentation e.g. promote a mix of large and as well as traditional storage and management techniques (including rainwater harvesting. c) Research into alternative sources of freshwater including the use of

	groundwater and non-traditional sources of water. d) Develop controls to restrict the use of fertilizers, pesticides and other chemicals on farms located in the vicinity of waterways. e) Restoration and or rehabilitation of critical watersheds. f) Promote Best Management Practices /GAP to minimize impacts on downstream activities. g) Develop and comply with watershed management plans. h) Encourage innovation particularly in the design and implementation of water projects. i) Encourage formation of water catchment groups among farmers and local communities (to play active roles in catchment maintenance, especially erosion control, water quality and biodiversity conservation). j) Undertake economic valuation of strategic or unique natural ecosystems. k) Design conservation programmes to reflect the needs and involvement of the local communities that depend on them. l) Implement mitigating measures, e.g. erosion control measures, to minimize the level of siltation. m) Develop and comply with environmental management plans for development activities. j) Limit water abstraction to satisfy ecosystem requirements.
10. Integrate Development with Ecosystem Conservation	a) Establish management regimes that control development activity within and in the vicinity of watersheds. b) Effect cooperation and coordination between land use planners and water managers. c) Give priority attention to the implementation of the National Biodiversity Action Plan (NBASP) the Land Policy and other relevant protocols and agreements. d) Establish institutional mechanisms to ensure adequate data collection and monitoring systems to inform decision-making. e) Promote sustained community participation in the management of water resources.
11. Strengthen Human Resource Capacity	a) Capacity building for water resource management institutions. b) Encourage national and regional educational institutions to provide programmes on IWRM for training professionals in and for the water sector. c) Incorporate locally relevant water management topics into pre-school, primary, secondary and tertiary level education as well as into other learning and enrichment programmes. d) Establish education and training programmes directed at specific target groups with mechanism to mobilize and ensure involvement of youth, women and overall at "risk" groups in WRM.
12. Fostering appropriate cultural and attitudinal change	a) Design and deliver public education and awareness programmes on water resources management issues. b) Utilize non-traditional methods for communicating messages. c) Create a basic understanding of the water cycle (where it comes from and where it goes) through teaching in schools and via the media. d) Promote awareness of the water cycle and its implications among decision makers. e) Explain the need for everybody to protect against water pollution. f) Improve public awareness of watersheds and aquatic ecosystems and the

	capacity (defined in relation to water resources) of the island. p) Re-enforce or re-orient poverty reduction programmes to promote resource management for sustainable livelihoods.