

**INTERNATIONAL NETWORK OF BASIN
ORGANIZATIONS**

**6th WORLD GENERAL ASSEMBLY
MARTINIQUE**

24 – 28 JANUARY 2004

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**WATER AND SEWERAGE AUTHORITY
(WASA)**

TRINIDAD AND TOBAGO

**INTEGRATED WATER RESOURCE
MANAGEMENT
IN SITUATIONS SPECIFIC
TO ISLAND BASINS**

CASE STUDY : TRINIDAD AND TOBAGO

Background :

Most Southerly Isle of the Caribbean

Population	:	~ 1,3 Million
Size	:	~ 11,000 km ²
Dry Season	:	January to May
Wet Season	:	June to December
Rainfall	:	2,200 mm Annually on average
Climate	:	Tropical island
Economy	:	Industrial, Energy based, Commercial

Water supply sources

Surface	:	65 %	Mainly in Northern Trinidad
Ground	:	25%	Mainly in Northern Trinidad
Desalination	:	10%	

Availability : 3600 MCM per year

Water Supply (Production) – 205 imgd

Major IWRM Players – WRA, Met Services, EMA, WASA, MOA, MOW&T, Energy, MOH, MOPD

Integrated Water Resources Management Issues

Institutional

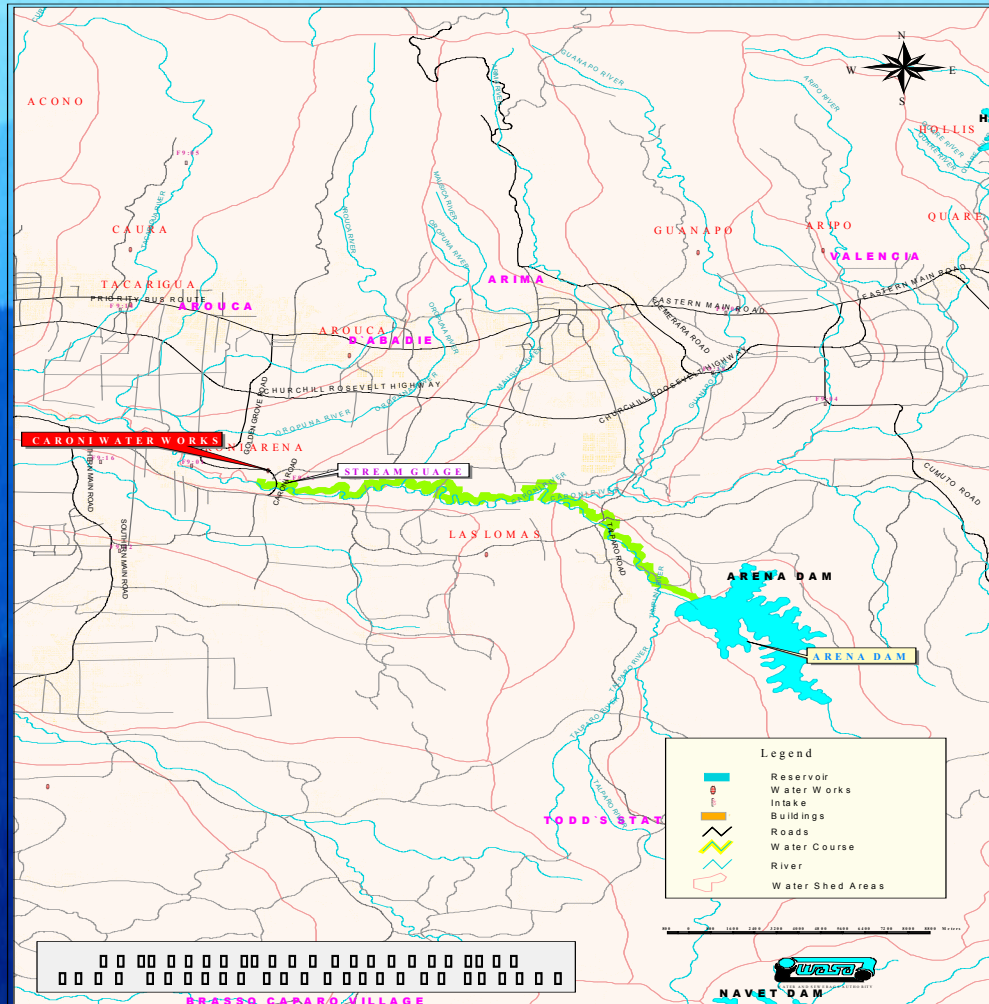
- ✓ Absence of Coherent Framework for Implementation of IWRM
 - Responsibilities spread amongst a Multitude of Agencies
 - Policy Framework not yet Adopted
 - Legislative Framework Splintered
- ✓ Shortage of Adequately Trained Professionals and Sub-Professionals
- ✓ Limited Funding for Accessing Training Programs
- ✓ Limited Information Systems and Equipment

Technical :

Case Study - Caroni River Basin

- ✓ Comprises Majority of the Northern Basin ~ 1500 km²
- ✓ Most Densely Populated Region of Trinidad (Larger Island) –
Basin Population ~ 500,000
- ✓ Supports Main Commercial, Minor Industrial and Agricultural Activities
- ✓ Feeds Main Storage Reservoir ~ 10 (ten) Billion imp. gall.
Largest Water Treatment Plant – Production 75 imgd
- ✓ Approximately 50 % of Country's Water Supply

CARONI RIVER BASIN SHOWING LOCATION OF RESERVOIR AND TREATMENT PLANT



Water Resources Challenges

Accelerated and Unregulated Housing Development

- ✓ Reduced Groundwater Recharge
- ✓ Diminishing Base Flows in Surface Streams

Climate and Weather Variability

- ✓ Spatial and Temporal Variability
- ✓ Severe Dry Season Spells in 2001 and 2003

Poor Watershed and Land Use Practices

- ✓ Slash and Burn Activities on Slopes of Northern Range
- ✓ Unregulated Quarrying Activities
- ✓ High Incidence of Forest and Bush Fires During Dry Season
- ✓ High Incidence of Flash Floods in Urban Centres During Wet Season

Deteriorating Water Quality

- ✓ Poorly Regulated Effluent Discharges into Water Bodies
 - Commercial, Industrial, Agricultural (Pesticides)
- ✓ Malfunctioning Wastewater and Sewage Treatment Plants
 - Cause of Recent Severe Disruptions in Water Supply
- ✓ Leakage from Underground Storage Tanks negatively impacting on Ground Water Quality

Absence of Coherent Water Allocation Framework

- ✓ Heavy Emphasis on Potable Water Supply
- ✓ Major Deficiencies in Meeting Irrigation and Environmental Requirements, Particularly During Dry Season
 - Livelihood of Farmers affected / Negative Impact on Food Production
 - Loss/Migration of Sensitive Eco-Species within the Caroni Swamp
(Largest Single Ecological System)
- ✓ High Levels of Illegal Abstraction within Caroni River Basin

High Levels of Unaccounted For Water in Supply System (Aged Infrastructure)

- ✓ Negative Impact on Conservation of Resource

Poor Water Resources Management Awareness

- ✓ Inadequate Water Resources Conservation Efforts
 - Direct / Indirect Disposal Of Solid Waste Into Watercourses
- ✓ Not Enough Recognition Given to Intrinsic and Economic Value of Resource

Poor Coastal Zone Management Practices

- ✓ Mining and Inappropriate Coastal Zone Developments
- ✓ Coastal and Marine Pollution from Discharges from Industrial and Petrochemical Industries along Western Coastline

Initiatives

Institutional

- ✓ Comprehensive IWRM Strategy Study initiated in 1997 and Completed in 2000
 - Focused on all Key Issues
 - Partnership with World Bank and Dutch Expertise
 - Incorporated Extensive Stakeholder Collaboration
- ✓ Work on Formulation of National Policy commenced in 2000
 - Policy now in Final Draft Form and Should be Adopted soon

Institutional cont.

- ✓ Work on Development of Legislative Framework is Expected to Commence by mid 2004
- ✓ Above Initiatives Incorporated Extensive Stakeholder Collaboration (Inter Agency and Local District Levels)
 - Intensification in International Year of Freshwater (2003)
- ✓ Initiated Local Training Program in IWRM at Tertiary Level – Building Human Resource Capacity

Regulatory

- ✓ EMA/ WASA Collaboration on Development of Standards for Effluent Discharge into Water Bodies
- ✓ Establishment of Clear Process for Environmental Clearances for Development Proposals

Stakeholder Collaboration/ Public Awareness and Education

- ✓ Convened Committee of Agencies and Interest Groups
Focussing on Allocation Issues within CRB during Dry Season
- ✓ Pursuing Program of Public Awareness and Education through
Mass Media – Targeting Water Conservation and Value of
Resource

Technical

- ✓ Consolidation of Monitoring Network
 - Seventy Five (75) Telemetry Stations installed
 - SCADA System being Implemented for Management of Potable Water Supply System within CRB
- ✓ Working with IDB to address negative Impacts of Wastewater Discharges on Coral Reef System in Southwest Tobago
- ✓ World Bank Support for Pilot Watershed Management and Protection Programmes along Northern Range
- ✓ Implemented Community Based Flood Monitoring System

Regional Collaboration

- ✓ Climate Change and Weather Variability
- ✓ UNDP-GEF Initiative for Integrated Management of Watershed and Coastal Areas – Tobago Demonstration

NATIONAL GOAL

- ✓ Improved Quality of Life for Citizenry
 - Year 2020 Development Horizon
 - Water Resources Management promoted as Significant Contributor to Attainment of Goal