
SIXTH WATER INFORMATION SUMMIT: BREAKING THE BARRIERS LET WATER INFORMATION FLOW!

**WATERWEB CONSORTIUM AND IRC INTERNATIONAL WATER AND SANITATION CENTRE
SEPTEMBER 9-12 DELFT, THE NETHERLANDS**

2003

BUILDING PARTNERSHIPS: A STRATEGY FOR BRIDGING THE WATER RESOURCES INFORMATION AND KNOWLEDGE DIVIDE IN THE CARIBBEAN

Herold Gopaul¹

ABSTRACT: Effective integrated water resources management needs a sound information base. The inadequacy of the information and data on water resources, and on water demand and supply is a clear indication of weaknesses in data gathering and information generation in the Caribbean. Water quality and quantity monitoring is dispersed amongst several public sector agencies and there are no national data quality standards to ensure data quality.

In many countries there is a lack of recognition of the value of in-depth, sustained information. The whole matter of what data, for what purpose, by whom, how much, how should it be processed and managed, who should have access to it, are questions that need to be addressed at the national and regional levels. This data is critical for designing and planning projects and guiding investments in the water sector.

The problem with water resources data seems to be caused by the disparate agencies responsible for data collection and the fragmented approach to the management of the sector, inadequate human and institutional capacity, inadequate training, poor organization and inadequate financial resources.

The weakness of the data gathering and information generation processes, also manifest itself in the countries poor inventory of water resources. Adequate assessment of the nature and distribution of water resources, including present and future demands, is key to good water resources management.

Taking the aforementioned as its cue, this paper presents a number of initiatives that are currently underway in the Caribbean with regards to Partnership Building in the water sector. These include partnership arrangements among sectors, between the public and private sectors, at the regional, national and international levels. Some of these initiatives include the Sustainable Development Network in Jamaica, Integrating Watershed and Coastal Areas Management in the Caribbean SIDS, Caribbean Dialogue on Water and Climate and Inter-American Water Resources Network.

¹ Information Services Director, Caribbean Environmental Health Institute (CEHI), P.O. Box 1111, The Morne , Castries , St. Lucia. Tel.: +1 (758)452 -2501; Fax: +1 (758) 453-2721; Email: hgopaul.cehi@candw.lc

In addition, the paper will highlight how these initiatives have sought to bridge the information and knowledge divide in the water sector. In particular, it would address knowledge management and knowledge sharing activities by giving concrete results. Finally, lessons learnt, including both positive and negative experiences would be presented focusing on what the Caribbean Region is doing to address such difficulties.

INTRODUCTION

Viewed on a global scale, the Caribbean region is well endowed with water resources. However, current predictions indicate that per capita water availability will shrink by 50% by the year 2025. This is due to rapid population growth and trends in urbanization, tourism, rural development, and agricultural and industrial development.

Concerns about the status of water resources management in the Caribbean have abounded for at least three decades. However, within the last six to ten years the issues relating to water resources management have gained prominence in the region. While commendable strides to establish policy and institutional frameworks to manage water resources have been made by countries such as Barbados, Jamaica, Antigua and Barbuda and Trinidad and Tobago; as a region, there is still a lot to be done.

For the Caribbean Small Island Developing States (SIDS), water resources management takes on added importance as a result of their small size, fragile environment and limited natural, human and financial resources. Water resources in Caribbean SIDS are also extremely vulnerable to the impacts of climate variability and change as a result of sea level rise and associated saltwater intrusion into coastal aquifers.

Other issues that are relevant to the water sector in the Caribbean Region include high water demand, inappropriate land use and watershed degradation, pollution, fragmented approaches to water resources management and a lack of technical expertise. There is also limited stakeholder participation/public awareness and education as well as inadequate data and information management structures. In addition, water is also not perceived as an economic good.

While as a region, there is ample supply to meet demand for the next fifteen to twenty years, the picture changes drastically at the country level. Some countries such as Dominica and Guyana have more than adequate water resources, but the infrastructure is inadequate to provide the necessary services. Overall, demand for water resources is increasing rapidly. For instance, in Barbados agricultural water use for irrigation is expected to increase from 20 million litres per day to 49 million litres per day by the year 2000 (IUCN, 1993). Generally water management has been poor in the region's agricultural sector resulting in low water use efficiencies, and improperly managed watersheds (Paul, 1996)

The tourism sector also places a heavy demand on the region's water resources. Studies by the National Water Commission of Jamaica indicated that the per capita demand in the tourism industry is ten times higher than the domestic demand. Apart from the demand issue, the sector

also generates higher wastewater discharges that pollute surface and groundwater resources as well as the near shore coastal zone.

The region is heavily dependent on rainfall to feed surface water intakes and replenish groundwater reserves. Changes in rainfall patterns are likely to have a great impact on the water resources situation in the region. The recent drought of 2001 in the region has had a negative impact on the water resources situation in all of the countries.

In nearly all countries the quality and quantity of water resources are declining, partially due to intensive deforestation and changes in land use. As the proposed Land Policy of Jamaica points out, 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 of the quality of both surface and groundwater resources". From a land use perspective, it is the uncontrolled and antiquated agricultural activities on the slopes that pose the greatest threat to the region's water resources.

Pollution is another alarming feature of water resources management in the region. The major causes of pollution include the discharge of untreated or inadequately treated domestic and industrial waste and wastewater as a result of badly maintained and supervised package treatment plants serving hotels, as well as insufficient solid waste collection systems and wastewater treatment systems. There is also rapid population growth and high population densities, especially in urban areas, allowing for concentration of direct pollution sources to surface and groundwater. Agrochemical pollution is also a factor in the form of agrochemical leaching, direct agrochemical influx from aerial and ground spraying and the indiscriminate and improper disposal of agricultural waste. Saltwater intrusion is another concern especially in countries like the Bahamas, Barbados and Trinidad & Tobago where there has been over pumping of groundwater.

The fragmented approach to water resources management in the region is another critical factor. In all of the countries there are multiple institutions and agencies involved in water resources management, each with their own piece of legislation and mandate, none of which is broad and deep enough, resulting in poor coordination. Integration is required to permit a continuous and evolutionary process which unites all stakeholders and disciplines in the planning and management of water resources, taking into account traditional, social, economic, environmental, political and historical perspectives and conflicting interests and uses.

There is a lack of qualified experts in the region. This is related to limited training and research programs at the tertiary levels. Where these programs exist, they are relegated to very short courses in one or two aspects of water resources management. Weaknesses in the technical capabilities, also manifest themselves in limited research capabilities in the countries. With the exception of Jamaica, Barbados and to a lesser extent Haiti, very little research on water resources management takes place in the region.

Integrated water resources management, by its very nature requires broad-base participation from the various stakeholders. However, it must be noted that in the Caribbean, participation does not guarantee the success of the solutions. This would require among other things, addressing the

issues of shortage of financial and human resources, development of an appropriate legislative and regulatory framework for water resources management, strengthening the institutional framework and addressing the issues of land tenure and compensation for affected people.

Effective integrated water resources management needs a sound information base. The inadequacy of the information and data on water resources, and on water demand and supply is a clear indication of weaknesses in data gathering and information generation. Water quality and quantity monitoring is dispersed amongst several public sector agencies. At this time there are no national data quality standards to ensure data quality.

Generally, in the Caribbean water is not viewed as an economic good but rather as a social and public good. As a result the pricing structure of water tariffs and rates do not reflect the capital and maintenance costs of the necessary infrastructure. In addition, water rights, water markets and pricing are not used to improve management. For most part, there are no incentives for consumers to use water efficiently. For example, in Barbados all metered customers must pay a minimum charge which may result in some customers paying for water that they may not have used. In other countries where there are fixed-rate (unmetered) customers, there is no incentive to conserve water, since they pay the same amount regardless of the amount they may use. Governments in the region have a strong desire to keep water rates within affordable levels, especially for the poor. This means essentially, that governments must subsidize water use, which in turn creates unsustainable market conditions to the detriment of the environment.

BRIDGING THE INFORMATION AND KNOWLEDGE DIVIDE IN THE CARIBBEAN THROUGH PARTNERSHIP BUILDING.

The assessment of the Caribbean island states' water resources management issues would seem to suggest that the region must adopt fundamentally new approaches to water resources management, including resource assessment, development and management within a framework of partnership. Without fundamentally new approaches to both environment and development, the present widespread degradation of the water resources that the region faces could become an unmanageable crisis. These changes can only be brought about through political commitment and involvement from the highest levels of Government to the smallest communities and backed by substantial and immediate investments, public education and awareness campaigns, legislative and institutional changes, technology development and capacity building programmes. (ICWE, Dublin 1992)

The desired future for the Caribbean is a sustainable future where water resources management will be integrated, effective and efficient. (Vision on Water, Life and the Environment for the 21st Century for the Caribbean) Sustainability of the region's water resources dictates that land and water management should be interdependent and indivisible.

To achieve this Vision water resources information and knowledge is central. Sound water management policies are pretty much dependent on the availability of data and information about the resource, its use, availability and vulnerability. (Karanjac, 2002)

In many countries there is a lack of recognition of the value of in-depth, sustained information. The whole matter of what data, for what purpose, by whom, how much, how should it be processed and managed, who should have access to it, are questions that need to be addressed at the national and regional levels. This data and information is critical for designing and planning projects and guiding investments in the water sector.

The problem with water resources data and information seems to be caused by the disparate agencies responsible for data collection and the fragmented approach to the management of the sector, inadequate human and institutional capacity, inadequate training, poor organization and inadequate financial resources.

The weaknesses of the data gathering and information generation processes, also manifest themselves in the countries' poor inventory of water resources. Adequate assessment of the nature and distribution of water resources, including present and future demands, is key to good water resources management.

To address these concerns regarding water resources information and knowledge, a number of initiatives are presently underway at partnership building. These include partnership arrangements among sectors, between the public and private sectors, and at the regional, national and international levels. Some of these initiatives include the Sustainable Development Network in Jamaica and Guyana, Integrating Watershed and Coastal Areas Management in the Caribbean SIDS, Caribbean Dialogue on Water and Climate and Inter-American Water Resources Network.

The Jamaica Sustainable Development Network: A Network of Community Cyber-centres (JSDN)

The Jamaica Sustainable Development Network (JSDN) is part of the Sustainable Development Network Programme (SDNP), a United Nations Development Programme (UNDP) initiative developed in response to Agenda 21.

The mission of the JSDN is to enhance citizens' capacity to access, understand, distribute and utilize information to enable them to sustain their livelihoods and socio-economic values while conserving their natural environment.

The JSDN program aims at benefiting all sectors of the Jamaican society through the access to information via the internet and information and communication technologies (ICTs). The primary focus is on the needs of community-based organizations (CBOs) in the rural areas as well as farmers, women's groups, small businesses and entrepreneurs.

Access to information and the internet is achieved through community focal points. The thinking behind the JSDN is to locate its focal point centres out in the community, in places that have a mandate to provide information, such as libraries.

Partnership agreements were established between the JSDN and the potential community focal points. Features of the agreement placed certain conditions on both partners.

For the community focal points these included:

- Must have a community development and/or information dissemination mandate
- Must have a secured location
- Must have trainable staff
- Must be willing to function as a node for a community network, including provision of information
- Must have a proven ability to network and serve a wide constituency of community interests
- Location must have community consensus.

The JSDN on the other hand is required to:

- Provide the centres with equipment
- Train staff of the centres and community members in basic computer use, the internet, web site development and maintenance and database development and information management
- Host community web sites

To day the JSDN has been quite successful with:

- Over six rural community focal points established, several of which have leveraged additional support for their activities
- Over 500 persons at the community level have been trained
- Over 4,000 persons have access to the internet/computer through the community cybercentres
- Standardized operating guidelines and business model developed for community cybercentres
- Business development programme underway to ensure financial sustainability of the network. This includes a user fees structure.

The long-term goals of the JSDN are to:

- Create a culture that values information and knowledge at all levels in the society

- Promote the idea that information increases in value the more it is circulated and used
- Foster the recognition of the value of local knowledge
- Have communities recognized as legitimate custodians of their information and knowledge

To achieve its long-term goals, the JSDN is a) assist communities in developing their community web sites; b) assist communities in developing their community information networks involving local partners and stakeholders and c) assist communities in developing their community level information systems.

The JSDN represents a success story in developing countries in bridging the information and knowledge divide through the building of partnership. The following are some useful lessons from the JSDN:

Information and Communication Technologies are valuable tools to support the sustainable development process in general and water resources management in particular. ICT can be use very effectively to bridge the gap in information and knowledge between rural and community organizations in developing countries and organizations in more developed countries.

Civil society organizations (CSOs) operating at the local and community levels are best placed to introduce technology to address the needs of the community
Partnership arrangements are workable in the long-run if partners are clear up front as to what is expected of them.

Rural, local and community persons are willing to use and pay for information and knowledge

Community and local organizations are willing to be involved in the collection, generation and dissemination of local information and knowledge if the right conditions exist. These include trust, recognition and appreciation of the local information and knowledge.

Contrary to popular opinion, the environment that exists in community and local organizations is that of "learning organization." This is where closer ties are foster with other organizations to ensure that information, knowledge and appropriate technology are assimilate in the organization to the benefit of the organization and the clients that it serves.

Integrating Watershed and Coastal Areas Management (IWCAM) in the Caribbean Small Island Developing States (SIDS)

In 1998, the Eleventh Meeting of the Forum of Ministers of the Environment of Latin America and the Caribbean identified the Integrated Management of Water and Coastal Resources as one of its priority areas for inclusion in the Region Programme of Action.

In 1999, work began on a Global Environment Facility (GEF) PDF Block B funding for the development of a project proposal for Integrating Watershed and Coastal Areas Management in Caribbean Small Island Developing States (IWCAM).

The long term objective of the project is to enhance and sustain the contribution of watershed and coastal area resources to the social and economic development of the participating countries (thirteen Caribbean SIDS²), by strengthening the capacity of these countries to implement and maintain an integrated approach to the management of watersheds and coastal areas. The objective also identified the interconnection between enhanced social and economic development, sustainable resource use and the integrated management approach.

An initial activity in the development of the project proposal was the preparation of National Reports for the thirteen countries which provided an assessment of water resources and coastal areas. Given the fragmented approach to resources management in both sectors and the disjoint between the two sectors (Water and Coastal areas), the challenge was in having access to information for the preparation of an integrated and holistic National Report.

To over this challenge, the approach used was that of partnership building. Two types of partnership arrangements were developed. One between the Executing Agencies of the project (the Caribbean Environmental Health Institute (CEHI) and United Nations Environment Programme Caribbean Regional Coordinating Unit (UNEP CAR/RCU)) and the GEF National Focal Points in the thirteen countries; and the other among the many stakeholders in the water and coastal areas sectors at the national level.

The partnership between the Executing Agencies and the GEF National Focal Points allowed for a two-way free flow of information. In addition, it created a degree of trust and ownership for the project, by involving the Focal Points in the work of the Project's Steering Committee.

At the national level, the partnership arrangement among the various stakeholders was based on the principles of "Action-Centred Network" as advanced by Carley and Christie (1994). This allowed for:

- a flat, flexible structure involving teamwork and partnerships
- equality of relationships among all relevant stakeholders
- vision value-driven leadership
- participation and organizational learning
- continuous performance review and improvement

² Antigua & Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines and Trinidad & Tobago

- progress of events at a pace which is sustainable given local conditions.

The partnership arrangements implemented for the IWCAM was successful in sharing information and knowledge between sectors, water and coastal areas; within sectors and between the national and regional levels. In addition these arrangements allow for consensus building for project activities. They provide the basis for easy access to water resources and coastal areas information and knowledge, the sharing of this information and knowledge among the stakeholders, consensus on the required interventions and approaches in the sectors and agreement on implementation of demonstration activities within the project.

The lessons learnt from the IWCAM arrangements are:

- Generators of information and knowledge are willing to share these if there is a likelihood that their use can accrue some benefits to the generators
- Participants in the partnership must feel that they can get some benefits from this arrangements if they are to remain in the arrangement
- Consensus building and trust are critical in "action-centred network" partnerships in general, and is absolutely essential if these partnerships involve information and knowledge sharing
- The value of information and knowledge increases as they are shared between and among partners.

Caribbean Dialogue on Water and Climate (CDWC)

The Caribbean Dialogue on Water and Climate is part of the global Dialogue on Water and Climate. The aims of the Dialogue are to improve the capacity in water resources management to cope with the impacts of increasing variability of the world's climate, by establishing a platform through which policymakers and water resources managers have better access to, and make better use of, information generated by climatologists and meteorologists.

The Caribbean Dialogue on Water and Climate, funded by the International Secretariat of the Dialogue on Water and Climate, was established to promote and coordinate policy discussion and action on water and climate among Caribbean countries. It provides the framework for the dissemination of information, exchange of experiences, collaboration, and communication to address climate variability and change in water resources management. It is also designed to promote the exchange of information and experiences with other small island states including those of the Pacific Region.

This partnership arrangement among water and climate professionals in the Caribbean and between the Caribbean and the Pacific Region was instrumental in bringing together information, knowledge and experiences for the development of a position paper for Water and Climate in the

Caribbean. This Position Paper received the endorsement of the Ministers at the 3rd World Water Forum in Kyoto, Japan in March 2003.

The long-term benefits of this partnership are joint project development and implementation by the Caribbean and Pacific Region for the water and climate sectors and a platform for sharing information, knowledge and experiences between professional in the water and climate sectors in the Caribbean and between the Caribbean and the Pacific Region.

A number of interesting lessons have been learnt from the Caribbean Dialogue on Water and Climate, including:

- Regions that have similarities, are eager to work together to address their common concerns. This includes sharing of information, knowledge and experiences and joint project development and implementation.
- Given a level of trust and transparency, actors in various sectors (water and climate) are willing to work with each other to address common concerns. This is so even when project funding comes to an end.
- The value of information and knowledge increases as they are shared among professional, between sectors and regions.

Inter-American Water Resources Network (IWRN)

The Inter-American Water Resources Network (IWRN) is a network of networks whose purpose is to build and strengthen water resources partnerships among nations, organizations, and individual; to promote education and the open exchange of information and technical expertise; and to enhance communication, cooperation, collaboration and financial commitment to integrated water and land resources management within the context of environmental and economic sustainability in the Americas.

The IWRN is composed of institutions, organizations and agencies from both the private and public sectors from the thirty four (34) participating countries of the Organization of American States (OAS). Each country is represented by a National Focal Point (NFP) which is appointed by the government. In addition, there is provision for an Operational Focal Point (OFP) to support the NFP by coordinating activities and meetings, disseminating information materials and consulting with governmental and non-governmental institutions and private businesses and individuals involved in the use and management of water resources in their countries.

The Unit of Sustainable Development and Environment of the OAS serves as the Technical Secretariat of the IWRN.

In the Caribbean, apart from the NFP, there is a Regional Focal Point (RFP) which is responsible for coordinating the work of the IWRN in the region.

The network promotes horizontal collaboration among member countries of the OAS and facilitates technological cooperation and information and data sharing. These are achieved

through the use of existing networks, organizations and technologies. The information and knowledge sharing aspects of the networks are through ICT, mainly web-based features such as: Directories of Water Resources Organizations and Professionals, Directories of Water Resources Training Opportunities, Water Resources Links, Calendar of Water Resources Events, Employment Opportunities in the Water Sector and Water Businesses Directory.

In the Caribbean, the IWRN is not as effective as in other regions. This is mainly due to the fact that:

- The selection of the National Focal Points was done through the Ministry of Foreign Affairs in the individual countries, and some of these NFP may not be best placed to carry of the work of the IWRN.
- Due to the limited human resource in NFP host organizations, the work of the IWRN is given lower priority. In addition, IWRN work is viewed as outside of the responsibilities of the NFP Officer and is perceived as mainly voluntary. The work of the IWRN NFP can at times take a large amount of the officer's time.
- The operations of the Network in the Caribbean are very loose and called for a more structured approach.

To address the ineffectiveness of the IWRN in the Caribbean, the following action have been taken:

- Review the existing NFPs to determine the need for NFP change
- Designate Operational Focal Point to support the NFPs. One important duty of the OFP is to actively seek out relevant information in the Caribbean for posting on the IWRN website
- Develop a Caribbean directory of individuals and organizations that are likely to benefit from the services of the IWRN and get them involved
- Strengthen the operations of the Caribbean chapter of the IWRN through regular meeting of the NFP, at least twice a year, to develop and coordinate the implementation of the Caribbean IWRN work program.

Lessons learnt from the IWRN operations in the Caribbean are:

- Human resources for networks are vital to their success. In this context, the roles of coordinators and focal points are critical and require dedicated, dynamic and committed individuals
- The roles of members in the network must be clearly defined and there must be agreement to these roles by the membership.

- The information generating role of members of the network must be clearly defined
- The information dissemination process should also take into consideration the needs of users/members without the capacity/access to ICT and specialized tools

CONCLUSIONS

Given the fragmented approach towards water resources management in the Caribbean, coupled with the fact that there are limited financial and human resources, partnership arrangements present a very attractive proposition in addressing the water resources information and knowledge concerns in the region. The very concept of integrated water resources management dictates the need for building and sustaining partnerships. It provides an opportunity for a multi-sectoral, multi-disciplinary approach firmly based on up-to-date and timely information and intelligence, ranging from scientific knowledge to social, economic, legal, policy and meta-information.

Partnerships for the generation and dissemination of information, intelligence and knowledge, really deal with intellectual property and therefore must be based on trust and mutual respect.

The sustainability of Caribbean partnerships for water resources information and knowledge generation and dissemination depends on the following:

- Meeting the ever changing needs of their partners
- Implementing some measures of cost recovery for services provided. This should include user's fees and exchange of services
- On-going assessment of the effectiveness of the partnership arrangements. This would assist in identifying new partners, partnership arrangements and products and services
- Creating the "learning organization" culture in partner organizations.