

Managing Water Resources for Sustainable Development: The Caribbean Environmental Health Institute (CEHI)

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Introduction

The provision of clean water for good health is of critical importance to the Caribbean. Beyond the problem of being water-stressed, many communities in the English-speaking Caribbean are without pipe-borne water and some also suffer from inadequate treatment of water supplied from rivers or other surface sources. Several communities are also plagued by water contamination resulting from improper disposal of human waste and/or by runoff from fertilisers and pesticides used in largely agriculturally-based economies.

The avoidance of epidemics and associated pathologies is of major concern to governments of the region. Issues related to water quality do not only have implications for the health of communities, but are also linked with the need for governmental outlays in healthcare, and with efforts towards the reduction of negative environmental impacts on fragile ecosystems. Addressing water quality issues is also import-

ant to those countries dependent on a viable tourism industry and its sustainability for economic development. High water quality of the marine environment is of special importance to the Caribbean as sustainable tourism depends upon safe water for recreational use. Additionally, the fishing industry depends upon marine environments free of contamination by human and industrial wastes. Technical and institutional capacities for water quality management at the national level are limiting factors and a regional response has been adopted as the way forward by Caribbean governments.

Background

An important agency in the forefront of assisting with the maintenance of water quality throughout the region, is the Caribbean Environmental Health Institute (CEHI). Established in 1979, CEHI represents part of an overall Caribbean Environmental Health Strategy, developed under the aegis of

the CARICOM Group of Ministers Responsible for Health. The Common Environmental Health Strategy, though formally approved in 1979 by the Ministers, was not operationalized until August 1988 when the Institute became a legal entity through ratification of an agreement by member governments. Headquartered in St. Lucia, CEHI currently serves sixteen Member States within the Commonwealth Caribbean.

The agreement establishing CEHI provides for a wide range of functions. Early activities revolved around projects which focused on the monitoring of environmental pollution. However, threats to environmental and human health around the region, forced an expansion of the agency's remit into other critical areas of environmental health. CEHI's operation was reorganised by the end of 1993 into six programming areas: Administration, Water Resources and Waste Management, Human Resource Development, Environmental Surveillance, Information Services, Laboratory Services. Funding was derived from quota contributions by member states to meet the Institute's core costs and from bilateral and multilateral donors for projects.

CEHI's efforts to become more viable and at the same time more relevant to its stakeholders, have been boosted by the preparation of a Strategic Business Plan (SBP) for the Institute in 1998. That

SBP sets out the framework for all future efforts of CEHI, including its funding mechanisms and its market orientations. The SBP has catalyzed a change management process within CEHI and has outlined critical success factors which have influenced the programmes developed by CEHI for 1999 and beyond. An emphasis has consciously been placed on water quality/resources in the programming of CEHI, as a building block for future work. This emphasis relates not only to technical assistance, but also to training, policy development, and environmental health "intelligences."

CEHI'S Work Programme:

The Context

CEHI has been guided in the past by specific mandates given to it by its governing body as well as through collaborative efforts in which it has become involved. These include the Caribbean Cooperation in Health (CCH) Initiative, which is now in its second phase. CCH-II has identified a number of priority areas for regional attention in the health sector. These include environmental health, and CEHI has been given responsibility by the Ministers of Health of the Caribbean Community for coordinating action under this priority area. Water quality is one of six specific sub-priorities under this priority area. The targets identified

for the region form the basis for concerted efforts, both nationally and regionally. CEHI forms part of the secretariat for this initiative and also has responsibility for developing projects to meet the CCH objectives and for reporting on progress in meeting these objectives.

Another recent mandate, complementary to the CCH, and which guides CEHI's programmes is the responsibility as lead agency for Freshwater and Waste Management under the SIDS POA, agreed upon by regional Ministers of Environment in November 1997. As part of the Caribbean Inter-Agency Collaborative Group (IACG) which emerged from that process, CEHI has been leading regional efforts to address water resources management, in partnership with such agencies as the OAS, IICA, UNEP, UNDP, CARICOM Secretariat, CWWA and CBWMP.

A Collaborative Endeavor

A hallmark of CEHI's efforts has been its positive collaboration **with** various institutions, regionally and extra-regionally. Although its work had focused mainly within the sub-region **of** the OECS in the 1980's, CEHI has also been supportive of efforts within the wider CARICOM region, in keeping with its

mandate. Some of its successes include:

- In conjunction with the OECS' Natural Resources Management Unit (NRMU), CEHI developed an integrated Coastal Resources Management Programme for the sub-region. CEHI has also implemented the environmental monitoring component of the USAID-funded Environmental & Coastal Resources (ENCORE) project, between the years 1994 and 1998, focusing most recently on water quality issues. These efforts saw the development of a regional water quality database, and "States of Water Quality" reports generated. An extension of that project has been recently negotiated with USAID.
- Its work on River Surveillance dealt with the development and integration of biotic and chemical monitoring and with land use assessment for tropical river resources management. Simple identification charts were developed for use by lay-persons, including children, which assist in the determination of the presence of contamination in river waters of the region. This joint project between CEHI and the University of Surrey from 1994 to 1997 provided information for the implementation of sustainable and safe water resources management policies by

the planning agencies of CARICOM governments.

- Under the CARICOM/GTZ Environmental Health Improvement Project, the following actions have been undertaken related to water resources:
 1. Funding and technical assistance to a self-help group in Saint Lucia in order to improve the water supply in the village of Praslin.
 2. Laboratory support to the Governments of Dominica, the British Virgin Islands, Montserrat, Saint Lucia, Saint Vincent & the Grenadines and Barbados for testing water samples.
 3. Support to Jamaica and Guyana in the development of appropriate approaches for enhancing laboratory capabilities for the testing of water.
- CEHI has a long history of collaboration with PAHO and as such, much joint planning of initiatives and implementations have occurred over the years. They are jointly looking at assisting countries in water quality improvement, with design to allow them to meet WHO Drinking Water Quality guidelines.
- The hotel sector in Saint Lucia has been a beneficiary of the work of

CEHI. Together with the Saint Lucia National Trust and the Saint Lucia Hotel & Tourism Association, technical advice has been provided on the operation and maintenance of existing facilities, selection and design of new wastewater treatment systems. CEHI also has a regular programme of monitoring of waste water treatment facilities in a number of hotels in Saint Lucia, including the provision of analytical services and technical advice.

- On a regional basis, CEHI has developed regional guidelines for sewage and industrial effluent in the early 1990's. CEHI has been integrally involved with relevant partners, such as UNEP, USEPA, the OAS, and regional and national agencies to further the development of effluent criteria for the region. Most recently, its involvement has included hosting a regional meeting of experts on "Pollution Control Measures for Domestic and Industrial Sewage" which led to a refinement of the relevant annexes of the Protocol on Land Based Sources of Marine Pollution, under the Cartagena Convention.
- CEHI has conducted work on behalf of clients such as the World Bank and UNEP related to the impact of tourism on environ-

mental health, specifically looking at water use, water demand and waste water management. Recommendations emanating from this work not only inform the tourism sector but also policy makers in relation to future development.

Through these regional collaborative efforts CEHI has been able to provide much needed technical support to countries of the Caribbean which individually would not have been able to do so themselves.

CEHI's Capacity-Building Activities

CEHI has made a major commitment towards capacity-building. For example, its work with the Caribbean Basin Water Management Programme (CBWMP Inc.), resulted in the strengthened capacity of thirteen water utility companies spanning the Caribbean Basin from Grenada to Belize to the Turks and Caicos Islands. The original objectives of CBWMP Inc. were to:

- Provide training on a regional basis for the employees of participating companies with emphasis on a self-sustaining training delivery system, and develop a local in-house training capability within the companies themselves.

Between 1975 and 1992, CBWMP operated under various funding

arrangements through CIDA, PAHO, the Caribbean Development Bank (CDB) and Member Utilities (MUs). Since 1992, MUs have assumed full responsibility for the C B W and have been working to build an institution that would:

”Provide for the sustainable growth and development of Caribbean Water Utilities and the promotion of water-related issues, through the delivery of quality training and utilising collective resources and experiences.”

Until recently, the CBWMP Inc. was housed at CEHI and an integral part of CEHI's programmes involved supporting the work of the CBWMP Inc. until it became completely self-sustaining.

Successful capacity building initiatives have included:

- Annual training in water works operations and sewage plant operation and maintenance.
- Training in occupational health and safety and the safe handling of chlorine.
- Training on techniques in water sampling.
- Training in sample preservation and use of selected field kits in drinking water quality monitoring.
- Training in the measurement of customer satisfaction (for water utilities).

Since 1994, some two hundred persons have benefitted from such training and eight OECS countries have also benefited from the upgrading and creation of facilities to perform water testing quality at the national level.

Training in water quality monitoring techniques and approaches for OECS nationals has taken place across the OECS. This training has included: the establishment of computerised water quality databases for water capture and processing; the elimination and reduction of sanitary hazards to water supply based on the identification of these risks; and the dissemination of water quality information at regional fora.

Conclusion

Although individual country actions still represent an ideal that all CARICOM countries continue to strive for, this has not always been possible. Without the input of CEHI on a collaborative regional basis, serious water quality problems would not have received the kind of attention that they have and the extent to which these problems plague the region would certainly be much increased. Thus, although rigorous examination of the work and impact of CEHI was not possible in this brief overview, many governments and institutions in the Caribbean agree that in the absence of

solid coordination functions of a CEHI, inefficient reliance on ad-hoc donor driven interventions, would have been woefully inadequate for addressing the water and related waste management concerns of CARICOM states.

What would be the price in terms of human lives and economic impact resulting from water-borne diseases or epidemics for the island communities concerned? What too, would be the cost for the region as a whole, in terms of its vital tourist industry? The positive contributions of CEHI's operations have hitherto assisted in shielding the region from some of these negative circumstances or may have succeeded in making them more remote. CEHI has fulfilled many of the objectives of the SIDS Programme of Action. Its work has assisted in protecting the marine environment, freshwater supply, and by extension, the region's tourism industry. CEHI's community efforts have helped to foster a deeper appreciation of the effects of waste on water supply as have its water monitoring and data collection programmes at the regional level. Increasingly, member states have come to recognize the positive contribution of CEHI to environmental health. Reportedly, this recognition has manifested itself in an increase in the disbursement of quota funds from those member states between the years of 1995 and 1997. Finally, the contribution through external donor funding has underscored the Institute's value to environmental

health care by contributions to its capacity-building efforts, thereby improving the organisation's chances of greater effectiveness and sustainability.

Lessons Learned

The experience of CEHI has some important implications for the future of sustainable health, water quality and development in the region. From the case-study, the following lessons can be deduced:

- That external donor funding and its contribution to the sustainability of regional efforts for the provision of safe water resources remain critical to the regional effort at this point in time. Yet, the piecemeal and restricted funding from that source plays havoc with issues of sustainability thoroughness, collaboration and synergy.
- That stakeholder participation and activism are important for the success of projects affecting communities.
- That regional inter-governmental organizations continue to make substantial contributions to environmental safety and health with respect to water quality in the region.
- That expertise is resident within the region to manage environmental problems.
- That it is difficult to measure and fully appreciate the social and economic costs avoided by the preventive efforts of such environmental bodies as CEHI. In other words, their contribution is highly undervalued and not positively represented in the societal curriculum.
- That though administrations in the region have a feel for the importance of the work of institutions such as CEHI, limited budgets give other pressing concerns a higher profile and priority than those related to the environment.
- That there may be a number of critical environmental projects that can be addressed with community help in the region, if those affected knew which institutions were involved and how to approach those institutions for assistance.

Recommendations

More funding is required for expansion, improvement in projects and most importantly, maintenance of the various programs of CEHI. Although regular quota contributions are received from CARICOM member states committed to the programmes of CEHI, a more consistent pattern needs to be developed. Creative mechanisms to augment the contributions made by governments must be identified and implemented; for example, the recruitment of professional staff, other technical workers and equipment to facilitate extension and implementation of projects. By so doing, efforts to ensure an adequate and continuous supply of high quality water in the Caribbean would be enhanced.

Foreign technocrats, where necessary, should be contracted for appropriate time frames, so that the transfer of knowledge and technology can be successfully achieved and implemented.

Extension services of water collection and purification should be put into effect, to afford sufficient availability of clean water to all areas including remote villages, whilst also sourcing adequately essential water resources within the countries.

There should be an ongoing educational programme for the public to increase their awareness of the requirement for safe water supply. As a result of this, the communities' efforts can be mobilised to avoid pollution to the nation's water system and environment. Sustainability of these efforts should be emphasised.

Encourage stakeholder's participation in managing water supplies, including their protection in order to promote wider involvement in both water supply and environmental protection.