GEF-IWCAM Project Experience Note # 4

TITLE
Public Awareness and Changing Behaviour in support of IWCAM

PROJECT TITLE
Land Use Planning and Watershed Restoration in the Courland Watershed, Tobago.

PROJECT DESCRIPTION
The focus of this project was to alleviate the causes of environmental degradation in the Courland Watershed and Buccoo Reef area. The associated issues include acute land and marine based sources of pollution. The project therefore sought to address these causes by developing cost-effective and appropriate reception, storage and treatment strategies for domestic wastewater; developing treatment and discharge requirements and practices for industrial wastes; and orchestrating an integrated watershed management approach targeted at improving land-use practices. The vehicles to effect this change were broadly categorised into methods that would 1) mitigate or remove actual threats to siltation and erosion through community involvement initiatives, 2) reduce or remove coastal eutrophication and nutrient pollution, and 3) improve information dissemination and data capture to support decision making through intensive public awareness, with a view to influencing positive changes in community perceptions and behaviour.
The project was implemented by the Buccoo Reef Trust (BRT) a non-governmental organization on the island of Tobago, in the Republic of Trinidad and Tobago. The twin island state is located at the south eastern end of the Caribbean archipelago. Tobago has an area of 300 km², is characterised by two dominant natural resources, a metamorphic and volcanic mountain range, the Main Ridge, and a flat coral limestone platform which extends seaward. The Buccoo Reef, which is the subject of this study, is found on the more densely populated, south western side of the island. The reef is the largest of those from the flat coral limestone platform. It is also the largest fringing coral reef in Trinidad and Tobago, encompassing an area of 7 km². Regarding issues of governance, the Tobago House of Assembly (THA) is the local government authority that enjoys a certain degree of autonomy in the administration of the island’s affairs but still relies on the central government for policy development.

Within the last two decades, the island has been plagued by the widespread deterioration of the reef resulting from a decline in coastal water quality. This has been brought about by two main contributors. The improper treatment of sewage on the island which eventually gets to the reef because of the soak away septic tanks built into the porous coral limestone rock. Another contributor has been the dramatic loss of vegetation over the last 15 years leading to increased sedimentation. This is the result of an increase in construction and development brought about by the expanding tourism industry and general population migration; unsuitable farming practices and increasing forest fires.

A more prominent issue, and perhaps an underlying contributor, is the fact that natural resource management practices have not been as effective as needed for the protection of areas such as Buccoo Reef due to ineffective decision making and duplicated efforts brought about by a lack of official data sharing among government departments. More significantly, there appears to be a lack of environmental knowledge by primary stakeholders such as the public and senior government levels as well as limited involvement of communities in natural resource management.
To this end the project proposed to address issues of mitigating siltation and erosion in the upper watershed, mitigating eutrophication and nutrient pollution in the bay, and supporting policy makers, managers and administrators through a programmatic system of public awareness and sensitization.

**DESCRIPTION OF ISSUES**

The economic mainstay for Tobago is the tourism and fishing industries. Tourism generates approximately 55% of the island’s GDP with approximately 40,000 international visitors in 2008. Buccoo Reef also includes Pigeon Point which houses the island’s premier beach and water sport facilities as well as the nursery for commercial stocks of fish and shellfish. The impact of eutrophication and siltation becomes even more pronounced as it not only impacts on the natural environment but also the economic mainstay of the island. This creates an even more pressing impetus to treat with issues regarding environmental management. While the economic importance of the environment to the main sources of livelihood on the island is recognised by the general public, an understanding of the issues facing the environment and possible ways of abating these issues appears to be somewhat superficial.

There is a general lack of environmental knowledge and sensitivity at the public and senior government levels which is compounded by the more pressing matter of limited or non-existent involvement by communities in environmental management. Similarly, the benefits of participatory environmental management of the protected areas have not been effectively communicated. The approach taken to encourage public awareness and by extension, greater involvement by the necessary stakeholders has been detailed as one of the primary objectives of the GEF-IWCAM project in Tobago.

A multi media awareness and sensitisation campaign will be utilised to increase the knowledge base of public including school children by enhancing existing environmental education offerings. The focus of this experience note is therefore an examination of measures to increase awareness among the general public through the implementation of an intense public awareness campaign to address
the aforementioned issues of poor information dissemination and lack of public participation.

RESULTS AND LEARNING FROM EXPERIENCE
The project demonstrated how public education and awareness could be used as a tool to change behaviour which can ultimately lead to influencing policy shifts at the national governmental levels. This strategy targeted schools directly, as well as public and senior government sectors.

Project Results:
The Division of Education has, over the years, come to rely on the Buccoo Reef Trust to be the primary provider of environmental education among schools in Tobago. Particularly as a result of the IWCAM project, the BRT has also expanded this mandate beyond schools to include the general public including the private and public sectors.

Primary Schools
This programme included school lectures and tours for 15 primary schools in Tobago. During the Project, one lecture was held at a primary school in Port of Spain, Trinidad; and two primary and two secondary schools from Trinidad came to Tobago to be part of the “learning journey”. Over 300 students were reached as a result of this effort. These were mainly standard 3 students, ages 8-10 years old. The seven primary schools in the Courland watershed were able to carry out water quality testing at the point where the Courland River enters the sea. They were able to measure parameters such as pH temperature, turbidity and dissolved oxygen.

Awareness lesson plans highlighted the importance of watersheds and how human activities can affect systems such as reefs, wetlands and general marine health. The typical format of the presentations included a picturesque

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1 Equivalent to Grade 5
PowerPoint presentation with an interactive question and answer session followed by the captivating song “Wetlands Work for Us”.

Another feature of the schools tour was a display of real, preserved specimens of creatures that inhabit the coral reefs and wetlands. These specimens generated much interest among the children since it was often their first time seeing real marine animals. Teachers were encouraged to take their students on educational tours of reefs and wetlands. Many of them responded and initiated field trips, which were then organized and facilitated by the PMU.

As an extension of the school tour programme, and the resulting relationships with teachers, several opportunities arose for IWCAM to assist schools with various environmental projects. Some notable events were as follows:

- The IWCAM team played an integral role in helping to prepare the Montgomery Primary School for the Environmental Management Authority’s (EMA) 2008 National Primary School Environmental Competition. The team influenced the choice of topic in working with the students and teachers. One outcome was a music video for the school’s calypso named, “Polyp Conference”. The school won the competition, making it the first school in Tobago to capture the EMA prize. The school produced another music video in 2009 captioned, “Water, the Vital Story” with the aid of the IWCAM team.

- In 2009 St. Nicholas Primary School was also victorious at the “International Year of the Reef” song competition. The IWCAM team, in collaboration with CCC, produced a music video for the competition. The school won the first prize of US$1,000.00.

- Two story books were developed in 2008 and were reviewed in 2009 for placement in all Primary Schools throughout the island. The titles of the story books are: *The Adventures of Drippy the Raindrop* (which shows the need for clean water) and *Nature Boy Sid* (which illustrates the effects of inappropriate dumping of garbage on the marine environment).
Secondary Schools
The PMU team also interfaced with secondary schools at several levels, and included exposure to water quality testing and a specially designed vacation workshop for high performing students entitled “Sun, Sea and Science” (SSS).

Water quality testing
A seminar on water quality testing was held to commemorate World Water Monitoring Day in 2007; a worldwide activity designed by the International Water Association and Water Environment Federation to facilitate participation and create awareness among citizens about water quality. The GEF-IWCAM Project used this programme to leverage public support by bringing together one hundred and fifty enthusiastic science students and their teachers from all secondary schools in Tobago to participate in the launch. Water quality testing kits were formally distributed to the schools, six of which committed at the end of the activity, to participate in the water monitoring activity. The test kit provides equipment to monitor parameters such as: pH\(^2\), turbidity, dissolved oxygen\(^3\), and temperature. The kit is also supplied with complete lab-ware, accessories, sampling bottles, and reagents for 50 tests\(^4\). A practical session was held to demonstrate how water quality parameters were measured and how to use the

\[^2\] pH is a measurement of how acidic or how basic (alkaline) a solution is on a scale of 0 to 14. When substances dissolve in water they produce charged molecules called ions. Acidic water contains extra hydrogen ions (H\(^+\)) and basic water contains extra hydroxyl (OH\(^-\)) ions. Water that is neutral has a pH of 7. Acidic water has pH values less than 7, with 0 being the most acidic. Likewise, basic water has values greater than 7, with 14 being the most basic. A change of 1 unit on a pH scale represents a 10 fold change in the pH, so that water with pH of 6 is 10 times more acidic than water with a pH of 7, and water with a pH of 5 is 100 times more acidic than water with a pH of 7.


\[^3\] Adequate dissolved oxygen is necessary for good water quality. Oxygen is a necessary element to all forms of life. Natural stream purification processes require adequate oxygen levels in order to provide for aerobic life forms. As dissolved oxygen levels in water drop below 5.0 mg/l, aquatic life is put under stress. Oxygen levels that remain below 1-2 mg/l for a few hours can result in large fish kills.

(Retrieved on 22.09.10 from: http://www.state.ky.us/nrepc/water/wcpdo.htm)

portable test kits. Students were taken to nearby rivers and guided by the Project team to do the actual water quality testing using the provided test kits. This session was facilitated by WASA and DNRE. Students were also taught to use GPS to mark the testing points for future testing. This dataset was collated and submitted to the World Water Monitoring Day database.

**Sun, Sea and Science**

Sea, Sun and Science (SSS) is a BRT programme that the GEF-IWCAM Project was able to use in promoting its objectives. This programme started in 2002 and has since developed into the flagship Educational Programme of the BRT. Since its inception, “Sea, Sun and Science” has been a very attractive and popular vacation programme for students across Trinidad and Tobago. The GEF-IWCAM-Trinidad and Tobago Demonstration PMU took responsibility for organizing and implementing this programme in 2008 and 2009, coinciding with the life of the GEF-IWCAM Trinidad and Tobago Demonstration Project. The programme recruits between 35 and 40 youth, usually top academic performers, between the ages of 15 and 20 years, for a period of two weeks during the July-August annual vacation. Each day is dedicated to some practical exercise in environmental management. Some of these exercises included: Watershed hikes and tree planting; coral reef and wetland field trips and surveys; introductory training in SCUBA diving and sailing; presentations on sustainable fisheries with tours to fish processing plants; counseling in career opportunities and other such areas. The aim of the programme is to interest some of these bright students in careers in environmental conservation. This is done by engaging them in interactive, fun-filled, unforgettable, learning experiences, while exposing them to different career avenues that are available in the area of Environmental Management.

**Community Education and Public Awareness**

The Project team capitalized on every occasion to promote the goals and activities of the GEF-IWCAM Project. To this end, the team took advantage of various environmental awareness days to promote IWCAM objectives. These
included exhibits, televised interviews and film. Some of the more recognised events are as follows:

- **World Wetlands Day 2009**: The Project team simultaneously conducted televised interviews on two television stations, one in Trinidad (national) and the other in Tobago (local). The wetland video created by the BRT Education Unit was also aired as part of the interviews.

- **World Food Day**: This event is a major calendar event for farmers and agro-suppliers in Tobago. It is sponsored by the Department of Agriculture and runs for two consecutive days. Over two thousand persons visited the exhibition over the two days to include adults, children as well as exhibitors from Trinidad. The Demo Project participated in this exhibition for the past three years, 2007-9. The exhibition booth displayed illustrations of how watersheds and reefs play a critical role in sustaining food security. Brochures and tokens were distributed, and video and lecture presentations were made.

- **World Environment Day (WED) 2009**: This day of observance was used to sensitize the general public about the impact of littering and the “Triple-R” waste management strategy of “Reduce, Re-use and Recycle” to help manage waste. The PMU collaborated with the Department of Public Health of the THA, Environment Tobago (ET), CEPEP and SWMCOL, to collect garbage and to display this mass of litter in the heart of Scarborough (on the Port Authority’s Compound). This was done as a deliberate attempt to demonstrate to the public how garbage can pile up incrementally, and how offensive garbage pile up can be in unwanted places. ‘Person-on-the street’ interviews were also done on camera as part of the awareness drive. It should be noted that the event was held on the day when Trinidad and Tobago football team had a FIFA World Cup qualifying match in Tobago; this provides a larger audience in Scarborough on that day and several Trinidadians who came to see the game were able to view the booth display.
• In 2010, DNRE sponsored a family day for the general public as part of the World Environment Day awareness drive. The PMU assisted the DNRE with the public awareness tour to the Bon Accord Lagoon and the Buccoo Reef.

• Other public awareness programmes included television appearances by the PCU and PMU thereby providing both local and regional perspectives, and creating awareness in the wider Tobago community. Students and teachers were also taken on field tours in the watershed, the WASA treatment plant in the Courland watershed and the Buccoo Reef. Lectures were held at each site where the tour took place, with the appropriate professional from the respective agency facilitating the presentations and discussions.

• One-on-one public awareness was conducted via village walk-through from Castara to Les Coteaux in 2007 and from Mason Hall to Les Coteaux in 2009. This was done in collaboration with University of the West Indies (UWI), St. Augustine UWI Student Endeavours (UWISE). One-on-one conversations about watershed management was held and flyers were distributed.

• Another public awareness initiative was a five-part live television series that collectively engaged key government stakeholders, whose responsibilities had an environmental underpinning, to provide pertinent information to the general public about fire detection, prevention and suppression within the watersheds. The government stakeholders who collaborated with the PMU included Natural Resources and the Environment, Fire Services Division, Tobago Emergency Management Agency, Information Technology Centre, Water and Sewage Authority, and the Meteorological Office.
Learning from the experience:

The impacts of the school training activities were tremendous, and an indication that exposure of a certain quality and calibre may significantly impact behaviour and career choices.

The school based activities resulted in increased interest from students who subsequently submitted applications to do Environmental Studies for the School Based Assessment (SBA) at many Secondary Schools in their respective science-based subject areas. Coral reefs became a very popular choice for SBAs. About 33 individual students, from the six secondary schools across the island, and two Geography teachers were assisted in various ways by the IWCAM team in fulfilling their projects.

The success of the SSS programme is evidenced by the significant number of recruits who are involved in, or in pursuit of, careers that have an environmental management orientation. Many of the former participants have chosen pursuits and careers that were in some way influenced by their two weeks of SSS. For example, BRT currently employs three former participants in SSS programmes.

There are many other graduates who are employed at various institutions responsible for Natural Resources Management in both Trinidad and Tobago. These include one person at the Environmental Management Authority (EMA); four persons at the DNRE/THA; one (1) person at DNRF and two (2) at BRT.

The demonstration of garbage spewed over the Port Authority compound to illustrate the offensive nature of indiscriminate solid waste disposal, had the desired effect and many persons were drawn to the information booth. There they were provided with more relevant information and strategies to implement “Triple R” solid waste management strategies in their respective homes.
REPLICATION

The conditions for replication of good practice or lessons learnt are often dependent on the local conditions that facilitate this. These conditions include availability of the technical and financial resources to replicate what may appear to be an excellent approach to addressing an issue. In the case of Tobago, the existence of the BRT with its tremendous technical capacity, both human and technological, is unsurpassed in other Caribbean SIDS. However, most Environmental NGOs in SIDSs should be able to adopt similar approaches through summer camps, and other student training programmes as well as public demonstrations on the impact of poor solid waste management in a dramatic fashion.

The engagement of students through the SSS vacation programme and the applied research using water quality test kits were excellent introductions to environmental management. These strategies clearly prompted young person to view this field as a career option. The issues of poor public sector policy responses to environmental issues may begin to see some difference as more and more young people enter the field and move up the management ladder. Influencing policy change in a significant way may be a generation away, but the process has clearly started in earnest.

The simultaneous approach at public information and educational activities can only serve to enhance this approach which has begun in schools. However, this public awareness campaign must be sustained if the message is to be reinforced and to take root in the psyche of the public.

SIGNIFICANCE TO GEF-IWCAM

The GEF–IWCAM approach is a strategy that incorporates watershed and coastal areas management in achieving improved overall watershed management objectives. The strategy covers coastal area management and biological diversity conservation; tourism development policy and planning; protection of water supplies; and land and marine-based sources of pollution. A
public education campaign to change behaviour is the fundamental basis of achieving the objectives of IWCAM as it is human behaviour which must be managed and not necessarily the ecological environment.