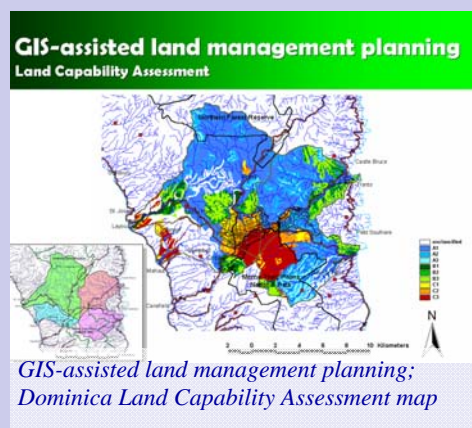


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### GIS Training Workshop for GEF-IWCAM Countries

The GEF-IWCAM Project held a Geographic Information Systems Training Workshop for Participating Countries from 9 – 12 July 2008,



in Cienfuegos, Cuba.

This was the first GIS 'hands-on' training offered under the GEF-IWCAM Project and followed the Capacity Assessment of GIS Capabilities in Participating Countries and resulting Road Map completed in 2007. All 13 countries participated. Participants all had some background in GIS and were afterward expected to apply this training to IWCAM at either the Demonstration Project or at the national level.

The objectives of the Training Workshop were: To introduce GIS concepts relevant to watershed and coastal areas management; to provide training in Pollutant and Erosion Modeling, and; to further strengthen the regional network of GIS practitioners (through an Informal GIS Working Group).

Dr. Christopher Cox, Ag. Programme Director, CEHI, stressed the importance of participants considering their roles in the creative application of GIS to IWCAM. In terms of support for decisions of a technical nature, Demonstration Projects could possibly assemble archives of data specific to their respective watersheds

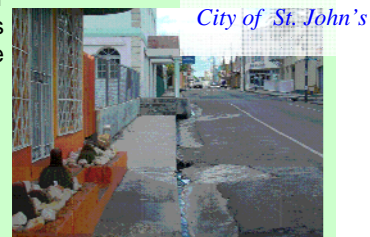
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### Feature Article:

### *Antigua & Barbuda Demonstration Project:* Mitigation of Groundwater and Coastal Impacts from Sewage Discharges from St. John's

McKinnon's Pond, north of the capital St. John's and in the same parish, is site of the GEF-IWCAM Antigua and Barbuda Demonstration Project.

St. John's has an urban population of 45,000, sixty percent of the country's total population. There are inadequate sewage handling and treatment systems in place. While the majority of households use septic tanks, these are not pumped regularly. This often results in septic failure and overflow, causing untreated effluent to go directly into drains. Most of this effluent eventually drains into the St. John's Harbour and impacts on nearby McKinnons Pond causing high levels of marine pollution.



*Fish kill, McKinnon's Pond*

This coastal wetland, used to be an important site for migrating birds, resident birds and waterfowls and an important spawning habitat and nursery area for juvenile fish and shellfish. In 1968 a road was constructed to link hotels and entertainment facilities at the northern and southern ends of the Pond. This resulted in an embankment that eliminated the natural link and connection of the Pond with the sea, impacting the wetland significantly. There was a loss of flora including mangroves and decreased populations and diversity of bird species.

Currently, McKinnon's Pond is an open area of stagnated water lined by sparse live and dead mangrove trees. The Pond itself is devoid of vegetation and in some areas has been physically altered and enhanced to provide roosting sites for birds and bank stabilization/fortification to address flooding. It is polluted by an influx of wastewater discharges and sediment loads from point and non-point sources, posing a threat not only to surrounding communities but also to the water table and ground water quality. In addition, the Pond has become infested with mosquitoes and is a health threat to adjacent communities.

*(Continued on page 2)*

## St. Lucia Integrated Water Resources Management (IWRM) Inception Workshop

As part of the GEF-IWCAM Regional Activities, the Caribbean Environmental Health Institute and the GEF-IWCAM PCU are working together to hold Integrated Water Resource Management Planning Workshops in the 13 Participating Countries. To date, IWRM Workshops or related activities have taken place in:

- Antigua and Barbuda
- Barbados
- Dominica
- Grenada
- Saint Lucia
- Saint Vincent & the Grenadines (Union Island)



*Participation was excellent; discussions were lively*

The most recent workshop, which took place on 12 August 2008 in Castries, St. Lucia, was very well at-

*(Continued on page 3)*

## BACKGROUND ON THE GEF-IWCAM PROJECT:

*The Global Environment Facility-funded Integrating Watershed and Coastal Areas Management in Caribbean Small Island Development States (GEF-IWCAM) Project was approved by the Global Environment Facility (GEF) in May 2004. Implementing agencies are the United Nations Environment Programme (UNEP) and the United Nations Development Programme (UNDP). Executing agencies are the Secretariat of the Cartagena Convention (UNEP-CAR/RCU) and the Caribbean Environmental Health Institute (CEHI) and the UN Office of Project Services (UNOPS). The thirteen participating SIDS are: Antigua and Barbuda, The Bahamas, Barbados, Cuba, Grenada, Dominica, Dominican Republic, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago. The length of the Project is 5 years and commenced in the second quarter of 2005. The Project Coordinating Unit is located at the CEHI, as agreed by the Implementing and Executing Agencies and the participating countries.*

*(Continued from page 1)*

The Demonstration Project aims to address the issue of coastal pollution caused by sewage and wastewater discharge from the parish of St. John's. It precedes an overall plan to identify a cost effective solution to this problem for the St. John's watershed, and eventually the entire country, through the design and development of street-



*Lower income, unregulated housing located along the edge of McKinnon's Pond*

level or other appropriate systems to handle primarily domestic wastes.

The main barriers to better control and management of sewage handling, treatment and discharges are:

- Lack of adequate domestic handling and holding facilities within the parish of St. John's
- Lack of treatment facilities prior to discharge
- Inappropriate waste disposal mechanisms for septic tank sludge
- Inadequate legislative control and lack of capacity for enforcement
- Poor incentives/disincentives for appropriate construction and use of effective septic tanks
- Inadequate monitoring of water quality to guide policy-makers and legislators.

The main anticipated outcome of the Demonstration Project is the general improvement in quality of the land and marine environment which represents a renewable natural resource and is critical in maintaining ecosystem functions.

The Project Management Unit is located at the Environment Division of the Ministry of Tourism, Civil Aviation, Culture and the Environment. Local partners/stakeholders include the Antigua Public Utilities Authority (APUA), the Central Board of Health (CBH), the Public Works Department (PWD) and the St. John's Development Co-operation.

*(Continued on page 3)*



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Project activities thus far have included:

- Providing information regarding the project to the community
- A range of public awareness activities, including the creation and airing on local radio stations of an IWCAM jingle and production of a brochure and flyers
- Regular meetings of the Technical Advisory Group (TAG)
- Commissioning of data collection exercises and a legislative review
- Technical cooperation with the Government Laboratory to enable the analysis of samples
- Lobbying relevant government agencies to establish policy and legislative documents on sewage management for Antigua and Barbuda.

In a related initiative, CEHI and a team from Cuba, at the request of the Government of Antigua and Barbuda, recently completed an Environmental Scoping Exercise on McKinnon's Pond (see article, pg. 3). Four possible courses of action were identified: marina development with supporting amenities; rehabilitation; land filling and reclamation, and; no-action. Whichever course of action is eventually taken, the issue of pollution of the Pond and nearby coastal area as a result of sewage and wastewater discharge is a fundamental problem which must be dealt with first.

The support of the local community is key to the success of the GEF-IWCAM Demonstration Project. A public con-



*Antigua & Barbuda's Minister of Health, John Maginley, answers questions from the group.*

sultation was held on 17 June 2008, to coincide with activities marking World Day to Combat Desertification and Drought, at the Wesleyan Junior School. About 40 people representing villagers, the hotel sector, a local NGO - the Environment Awareness Group, the Ministry of Public Works, the Environment Division, and the Antigua Public Utilities Authority attended. Also on hand to answer questions were the Health Minister, John Maginley, Environment Minister Harold Lovell, Former Chief Town and Country Planner Charlesworth Davis and GEF-IWCAM Project Coordinator, Melesha Banhan.

## Antigua & Barbuda benefits from technical cooperation with Cuba

The GEF-IWCAM Project arranged for the Government of Cuba's Centro de Estudios Ambientales de Cienfuegos (CEAC) to provide technical assistance to the Government of Antigua and Barbuda for environmental modeling of the north-west coast of Antigua. The Government of Antigua and Barbuda is seeking to develop a comprehensive, holistic, and multisectoral management plan for the North-West Coast of Antigua.



Three Cuban experts *Cuban experts visit McKinnon's Pond* from CEAC, along with the GEF-IWCAM RPC and representatives of CEHI, visited Antigua during the week of July 28<sup>th</sup> to collect data on the North-West coast of Antigua. The Cuban team is working directly with the Environment Division of the Ministry of Tourism, Civil Aviation, Culture and The Environment. The integrated approach being taken also relies on inputs from the APUA and the Ministry of Health, given the importance of the area to the major economic sector, tourism, as well as the health of the population.

This work will focus on environmental characterization of coastal zones, examination of sedimentation processes and mathematical modeling of marine currents and accidents (such as oil spills) in coastal zones. The studies are being conducted specifically to recommend solutions to the pollution problems affecting McKinnon's Pond and also solutions to the beach erosion and periodic flooding experienced in the area.



*Beach erosion at Buccaneer Cove*

CEAC will prepare models based on data and information gathered during this visit, returning to Antigua later this year to share their findings and provide training in analysis.

Complementing this is a scoping exercise conducted by CEHI in order to identify further work needed towards development of the management plan.

(Continued from page 2)

tended, with stakeholders from government, the private sector, and community groups. Participants discussed the IWRM approach and what needs to be done in order to adopt it as a standard management practice in Saint Lucia. Of particular interest and relevance, and vigorously discussed, were the potential privatization of the water utility (WASCO) and the establishment of the Water Resources Management Agency within the Ministry of Agriculture, Fisheries, and Forestry.

CEHI, under the auspices of the GEF-IWCAM Project, will continue to work with St. Lucia to help with the development of a "roadmap" for IWRM Planning, an approach similar to that which has been taken in other countries, and also on the implementation of IWRM activities.



## Demonstration Project Highlights

### Jamaica: Farmers Training Day at Horses Savannah, Drivers River Watershed

One of the major challenges faced by the Drivers River Watershed is that the area is steep and soils are easily eroded. To combat this, the GEF-IWCAM Demonstration Project, through its Livelihood and Sanitation Committee, engaged the Hectors River Jamaica Agriculture Society Farmers Group on August 13, 2008 to provide training to farmers in the Drivers River area.

A total of twenty male and female farmers participated. The training was focused on the stabilization of soils using pineapple and vetiver barriers. Using an integrated approach, a number of the Demonstration Project's partner agencies were also present to impart their experience and expertise.



*Demonstrating use of A-frame*

The demonstration took place on approximately quarter of an acre of land, on one of the farmer's holdings. Using sticks found on the property, an "A-frame" was made. In addition three pieces of sticks of equal length (2 feet) were used to make a triangle; illustrating to those present the use of indigenous material. The "A-frame" was then used to delineate the contour which was pegged and lined.

To ensure that pineapple sets were placed 2 feet apart the triangle was then used. This was followed by the cleaning and planting of two hundred and fifty pineapple sets and approximately 2 lengths of vetiver grass. To ensure maximum understanding each farmer was then given the chance to repeat the process, corrected and commended by other participants as the training continued.



*Using the triangle*

*Men prepare holes; women plant*



### St. Lucia: Rainwater Harvesting Sub-Project launched in Dennery

In order to demonstrate rainwater harvesting (RHW) as a simple and low-cost water supply technology which can provide water at an acceptable quality standard, the St. Lucia Demo Project launched a Rainwater Harvesting (RWH) sub-project in



*Launch attended by PCU, Project Implementing Agencies- UNEP CAR/RCU and CEHI, and other partners*

May 2008 which is funded by the GEF-IWCAM Project and the EU. It aims to complement the current water scheme and enhance reliability of water supply within the Fond D'or watershed, particularly during the dry season and periods of induced and natural drought.

Before the advent of a centralized water delivery service, these communities relied solely on the harvesting of rain water therefore, although its use has declined over time and is practically non-existent today, it is not entirely new.

With the application of best practices, most water quality standards can be met. It has the additional advantage of being a relatively simple and low-cost water supply technology which is generally easy to install and maintain.

Sub-project activities include:

- Adopting an appropriate design,
- Training potential contractors in construction of the system,
- Constructing 20 systems in visible locations within each of the settlements,
- Constructing complete RWH units at 10 public institutions; (6 schools, 2 Health Centres, 1 Police station, and the Dennery hospital (3000 gallons each),
- Estimating water supply impacts (quantity, quality, preferences) and economic benefits, and
- Conducting community awareness program in support of RWH.



*You have just entered the*  
**Fond D'Or Watershed**

This is a  
Rainwater Harvesting Demonstration Area



## Demonstration Project Highlights

### Trinidad & Tobago:

#### Community group becomes involved in watershed reforestation effort

The Courland watershed, site of the Trinidad and Tobago Demonstration Project is ravaged by bush fires annually. A local community group, the Anse Formager Ecological Environmental Protection Organisation (AFEEPO), was formed in 2006 by Lyndon Glasgow and Anthony Corder. Their original concern was the rapid deterioration of the Anse Formager Beach.



*AFEEPO President, Lyndon Glasgow, shows area for reforestation in watershed*

Lyndon and Anthony embarked on a project to restore the beach to its former glory by ridding it of piles of garbage that had accumulated at the mouth of the river and to restore the bare, rain battered, hillsides which fringed the beach. A call for other members of the community to assist in the reforestation effort received an overwhelming response, motivating the two men to consolidate interested participants into pursuing a bigger vision. As a result, a core group of 18 dedicated members is now functioning with an expanded mission: that of bringing a halt to the degradation of the Courland watershed and empowering the community towards more sustainable ways of living by rehabilitating the forest

and restoring more traditional agricultural practices.



*Members of AFEEPO tour Fondes Amandes with Akilah Jaramogi*

With the support of the GEF-IWCAM Trinidad and Tobago Demonstration Project, a visit by AFEEPO to the Fondes Amandes Community Re-Forestation Project (FACRP) in the northern range of Trinidad was organized in May 2008. The visions and missions of these two community groups are very similar. Visiting members of the AFEEPO were inspired as they saw the success of the FACRP which faces challenges many times larger than theirs.

Future AFEEPO /IWCAM plans include training in fire prevention and detection, and disaster management in the forest. It is envisioned that AFEEPO will eventually function as a core fire fighting and conservation unit within the Courland watershed.

### St. Lucia:

#### Gardette Community Children's Summer Workshop

Students from the community of Gardette were treated to a fun-packed and educational summer workshop organised by the Gardette Development Committee in collaboration with the GEF-IWCAM St. Lucia Demonstration Project.

The Workshop aimed, among other things, to help the children understand the concept of a watershed, water quality, how water quality is measured, and why it is important to maintain good water quality. They were shown that certain domestic and farming practices can impact negatively upon water quality and were encouraged to think about how they dispose of garbage.



*Water sampling exercise*

The workshop was conducted mainly by three committee members, with input from the Demonstration Project's Liaison Officer, Cecil Henry as well as the Forestry Officer responsible for watersheds, Alfred Prosper.

Over a two-week period from 28<sup>th</sup> July – 8<sup>th</sup> August 2008, thirty children between eight and ten years old participated in a number of presentations and fieldtrips including:

- A water quality testing exercise at the CARDI bridge at La Resource, Dennerly;
- A visit to the Latille Falls in Micoud where they were treated to a demonstration on the generation of hydro-electricity with the use of a hydro-ram device which was installed in the waterfall.

The keen interest shown and eager participation of the children in both indoor and outdoor activities clearly demonstrated the value of the Workshop. Response to quizzes and evaluation exercises was excellent – a clear indication that they had learned about the Project, the Fond D'Or watershed and many issues related to water.

On the last day brochures and posters produced by the Project were distributed to students and facilitators. They all pledged to use the messages and lessons learned over the two week period for the benefit of their peers and community as a whole.

*Listening to lecture on "Life in the River"*





## IWCAM Indicators - an update

*This article summarizes Project work to date in the area of IWCAM indicators:*

### Indicators Assessment

In 2007 the GEF-IWCAM Project conducted an indicators assessment as part of a larger assignment on IWCAM indicators mechanisms. The objective of this study was to assess indicators mechanisms and capacity in the countries to utilize and monitor indicators for the IWCAM approach, and to develop an indicators template based on GEF International Waters indicators (Process, Stress Reduction, and Environmental Status Indicators). Data and information sources included published and unpublished documents and reports, internet searches, and a questionnaire distributed among the countries. In order to validate the findings of the desk study, ground-truthing was conducted in Barbados, Dominican Republic, and St. Vincent and the Grenadines. This report has been reviewed and finalized and now is located on the GEF-IWCAM web-site at <http://www.iwcam.org/information/gef-iwcam-and-iabin-indicators-mechanism-workshop/gef-iwcam-indicators-assessment-report-final-may-2008/view>

### Template

The indicators template constituted the second component of the indicators work. The major objective of this component was to develop an indicators template to monitor changes in the state of the watershed and coastal environments, monitor the trends in socio-economic pressures and conditions in watershed communities and coastal towns, and to assess the efficacy of IWCAM in addressing these issues and mitigating harmful impacts, both during the project and in the post-project period. In the longer term, the selected indicators would be adopted and tracked by the participating countries, according to their particular circumstances or needs. Each country would need to determine the baselines and benchmarks for each indicator, since these would vary among countries and issues.

A template was developed, based on the three types of indicators recommended by GEF for use in its International Waters Projects: Environmental Status/Water Resources Indicators, Stress Reduction Indicators, and Process Indicators. The template was thoroughly reviewed by GEF-IWCAM participating countries and partners and a final version can be found at <http://www.iwcam.org/information/gef-iwcam-and-iabin-indicators-mechanism-workshop/gef-iwcam-indicators-template-final-may-2008/view>

### Workshop

In March 2008, a GEF-IWCAM Indicators Workshop was held in Ocho Rios, Jamaica to present the revised assessment report and indicators template to representatives of the 13 participating countries. The Workshop was held in collaboration with the GEF-funded Inter-American Biodiversity Information Network (IABIN), with joint and parallel sessions. The major objectives of GEF-IWCAM for the workshop were to present the findings of the IWCAM indicators mechanisms and capacity assessment in the participating countries for discussion, inputs and feedback from participants; present the draft indicators template for discussion and obtaining consensus; and

discuss the way forward for implementation of the indicators template.

The consensus of this workshop was that the following next steps should be taken to further build on the indicators activities already conducted:

- Pilot testing of a suite of indicators in one of the participating countries;
- More focused training for the PCs on indicators (with IABIN) using existing data and case studies;
- Establishment of an IWCAM Indicators Working Group;
- GEF-IWCAM to conduct laboratory assessment to support monitoring efforts;
- Dissemination of lessons learned and best practices of management effectiveness, time-bound performance indicators, and synergies between the IABIN and GEF-IWCAM projects with a view towards a follow up workshop in early 2010.

A workshop report is located at <http://www.iwcam.org/information/gef-iwcam-and-iabin-indicators-mechanism-workshop/gef-iwcam-and-iabin-indicators-mechanism-workshop-final-report-april-2008/view>

### Application

Based on the aforementioned recommendation to pilot test a suite of indicators in a Participating Country, the GEF-IWCAM Project Coordinating Unit developed criteria used to determine the appropriate country in which to undertake this work. Criteria included government commitment to centralizing environmental indicators, ongoing monitoring of watersheds and coastal areas, and sufficient human and technical capacity to sustain the work after the intervention of the project. Based on this criteria, and in consultation with potential partners, it was determined that Barbados would be an appropriate country to pilot test the indicators template. The GEF-IWCAM Project, together with CEHI, then held a one-day consultation in Barbados in July 2008 to discuss IWRM approaches and the pilot testing. Following this meeting, the PCU is working with key stakeholders in Barbados to implement this approach.

The pilot project is in its earliest phases at this point, but some potential activities could include:

- Design of a database that could be used collaboratively by a number of government agencies to store key indicators
  - Creation of specialized queries and reports (decision support system)
- Training for government officials in the use of the database
- Public awareness campaign to sensitize public servants as to the use and value of the database

The results of this pilot activity will be shared with the other GEF-IWCAM participating countries to assist them with their future utilization of IWCAM indicators. In addition to this work, the PCU is working with the nine demonstration projects to help them identify indicators, establish baselines, and conduct regular monitoring.

*For more information contact: [sgottlieb@cehi.org.lc](mailto:sgottlieb@cehi.org.lc)*



## GEF- IWCAM at the Caribbean Environmental Forum and Exhibition (CEF- 4)

### Parallel Session:

The GEF-IWCAM Project sponsored Parallel Session 4 of the Caribbean Environmental Forum and Exhibition which took place at St. George's University in Grenada, June 23<sup>rd</sup> – 27<sup>th</sup>.

It was titled: "*Integrated Water Resources Management Concepts and Practices: Integrated Watershed and Coastal Areas Management SIDS*". It consisted of the following presentations, each followed by discussion.

- *Water Policy Development in the Caribbean and the Impacts of Climate Change* – Dr. Adrian Cashman, CERMES, UWI, Cave Hill, Barbados
- *Drought and Precipitation monitoring for enhanced Integrated Water Resources Management in the Caribbean* – Adrian Trotman, Caribbean Institute for Meteorology and Hydrology, Barbados
- *Design of a Storm water system to support aquifer recharge: The Vacluse Waste Management Centre, Barbados* – Dwight Smikle, J. Burnside International, Canada
- *A Review of Water Information Systems in the English-Speaking Caribbean: Challenges and Lessons Learnt* – Lystra M. Fletcher-Paul, Food and Agriculture Organization of the United Nations, Bridgetown, Barbados
- *Geographic Information System for Integrating risk by Inter-Relating Scores (GI) SIRIS* – Alex S. Ifill, Barbados Water Authority

Presentations were well received. The review of Water Information Systems, presented by Dr. Lystra Fletcher-Paul, in part, is serving as a catalyst for ongoing work in indicators in IWCAM in Barbados, one of the Project's Participating Countries.

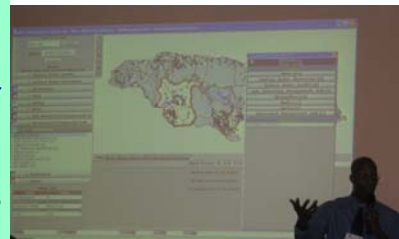
### Exhibition:

The GEF-IWCAM Project was one of fourteen exhibitors. The exhibit focused upon partnerships and progress in four of its Demonstration Projects: Cuba, Jamaica, St. Lucia and Trinidad and Tobago and was manned by representatives of those countries and the PCU. It was set-up in conjunction with UNEP's Caribbean Environment Programme.

### Plenary:

The GEF-IWCAM Regional Project Coordinator also chaired the Plenary Technical Session at the CEF-4, which included panelists from the WSSCC, USEPA and the Austrian government.

**Presentations made at CEF-4 can be found at:** <http://www.cehi.org.lc/Website/pres.htm>



### STAFFING UPDATES

**Dominican Republic:** Ms. Mercedes Socorro Pantaleon has been appointed the Demonstration Project Manager for the Dominican Republic's Demo, effective June 2008.

**St. Kitts and Nevis:** Mr. Ian Liburd has been appointed the Demonstration Project Manager for the St. Kitts and Nevis Demo, effective August 2008.

**The Bahamas:** Mr. Sherlin Brown has been appointed the Demonstration Project Manager for the Bahamas Demos, effective September 2008.

(Continued from page 1)

and use this for basic analysis. Countries without demonstration projects could consider replicating analysis for 'hot-spot' watersheds. In terms of support for decision making of a political nature, GIS could be used to demonstrate relationships / cause and effect to National Intersectoral Committees, senior administration personnel and ministers.

Jean-Nicolas Poussart, Junior Programme Officer, UNEP, focused on the use of GIS as a tool to promote the implementation of the Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol) which was adopted in 1999 but which had, to date, been ratified by only 5 countries. The estimation or characterization of both point and non-point sources of pollution is key to this Protocol. Annex 4 deals with the single largest non-point source of pollution, agricultural runoff.

Vijay Datadin, GIS Officer, Buccoo Reef Trust and Trinidad and Tobago's Demonstration Project, who had taken part in N-SPECT training at CATHALAC in February 2008, in a series of hands-on training sessions introduced participants to the following free and open source types of GIS software:

- **Quantum GIS Vers. 0.10**
- **Integrated Land and Water Information System IL-WIS 3.4 Open**, developed by the International Institute for Aerospace Survey and Earth Sciences (ITC), Enschede, the Netherlands.
- **RUSLE (Revised Universal Soil loss Equation)**

Data from the Trinidad & Tobago Demonstration Project was used for most of the exercises.

Several important points were raised during discussions. These included:

- Although GIS is currently used directly by only one GEF-IWCAM Demonstration Project (Trinidad & Tobago), several of the Projects have access to the services of a GIS department (e.g. Jamaica and NEPA) or specialist.
- In the context of watershed and coastal areas management, the GIS technician/specialist ideally works as part of a team which includes specialists, e.g. soil scientists, who are able to provide guidance as well as needed inputs.

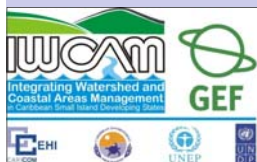


GIS Training Workshop Participants

- While any number of applications may be possible, the major criteria for deciding which one to use should be the urgency of the management issue to be addressed by decision-makers.
- The importance of ground truthing should not be underestimated and needs to be planned and budgeted for.
- Some countries, such as Cuba and Haiti, are developing national GIS databases.
- GIS is part of an information gathering, management and dissemination system - as such, serious thought should be given to the inputs (including types of data) needed when designing a project as well as to what will be done with the outputs/results.
- There is a need for **standardization of data and data integration issues**, given the different reference grids used. The relationship between indicators and GIS is also a priority issue to be addressed. In building databases attention should be given to supporting the requirements of the LBS Protocol as well as IWCAM and IWRM.
- A strategy is needed for getting the results of analysis using GIS out, particularly to decision makers.

The Final Workshop Report is available at:

<http://www.iwcam.org/information/gef-iwcam-geographic-information-systems-training-workshop-9-12-july-2008-cienfuegos-cuba/final-report-gef-iwcam-gis-training-workshop-9-12-july-2008-cuba/view>



Participating Country Focal Points, Demonstration Projects and others are invited to submit articles. Please contact Donna Spencer at [dspencer@cehi.org.lc](mailto:dspencer@cehi.org.lc)

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