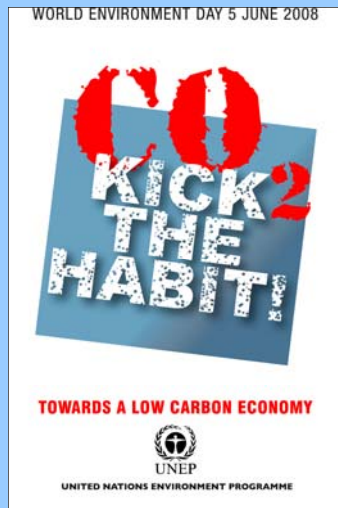


In this issue:

- Feature: IWCAM Legislative Toolkit is introduced—how can it make a difference? (pgs. 1,2,3)
- World Environment Day 2008 (pg.1)
- The LBS Protocol (pg.1)
- Do you see what we see? (pg. 2)
- UNEP Regional Coordinator visits PCU (pg. 3)
- IWCAM Question and Response (pg. 3)
- Climate Change—One more Assault on Fisheries (pgs. 4,5)
- Exploring Approaches to IWCAM in Haiti (pg. 5, 6)
- A Look at Environmental Damage in the Lower Haina River Basin, DR (pg. 7)
- The South Florida Water Management District—A Balancing Act (pg. 8)



The World Environment Day slogan for 2008 is **Kick the Habit! Towards a Low Carbon Economy**. Recognizing that climate change is becoming the defining issue of our era, UNEP is asking countries, companies and communities to focus on greenhouse gas emissions and how to reduce them. The World Environment Day will highlight resources and initiatives that promote low carbon economies and life-styles, such as improved energy efficiency, alternative energy sources, forest conservation and eco-friendly consumption.

For more information see: <http://www.unep.org/wed/2008>

In this issue we consider the effects of climate change upon Caribbean Fisheries. See pages 4—5.

The LBS Protocol

In October 1999, Parties to the Cartagena Convention adopted the Protocol Concerning Land-Based Sources and Activities (LBS Protocol), a regional agreement for the prevention, reduction, and control of marine pollution from land-based sources and activities. It identifies the major sources of land-based pollution and offers ways for decreasing their negative impacts on the coastal and marine environment. Signing and meeting the obligations of the LBS Protocol will help reduce priority pollutants in the wider Caribbean Region. It will also promote cooperation in monitoring, research and exchange of scientific and technical information.

To date, four countries, Trinidad & Tobago, Panama, France and St. Lucia, have acceded to the Protocol. Five more countries must accede before it can come into force. The GEF-IWCAM Project seeks to support countries to accede to this Protocol.

For more information see: www.cep.unep.org



Feature Article:

IWCAM Legislative Toolkit is introduced – how can it make a difference?

"Integrating our approach to watershed and coastal areas management is something that is well within our reach. However many Caribbean SIDS are handicapped in making this a reality given their limited human and financial resource capacities, inadequate legislative and regulatory environments, ineffective enforcement capabilities, and institutions that are not structured to address water resources matters in an holistic manner. Where successes have been attained in the Caribbean and other SIDS regions, those must be given highest prominence and emulated as relevant to the country context."



*Dr. Christopher Cox, Ag.
Programme Director, CEHI*

This view, expressed by Dr. Christopher Cox, Acting Programme Director of the Caribbean Environmental Health Institute (CEHI), formerly a Senior Forestry Officer and Assistant Chief Forestry Officer at the Ministry of Agriculture, Forestry, and Fisheries in St. Lucia, has been echoed throughout the region.

To help countries develop more integrated policies and legislation in support of integrated watershed and coastal areas management, the GEF-IWCAM Project has been working with the consultants of Environ-

(Continued on page 2)

Do you see what we see?



... a landslide!

Soils on steep slopes become landslides when saturated with water. This may happen after heavy rainfall and is exacerbated when the land has been left exposed as a result of clearing or forest fires. Landslides can have disastrous impacts, such as destroyed buildings, deaths of humans and livestock, increased sedimentation in rivers, blocked roads, etc.

These problems can be mitigated most simply through maintaining appropriate levels of vegetation.

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)

mental Advisors Inc., key stakeholders in the region and technical experts to develop the *Toolkit for Institutional, Policy, and Legislative Improvements in Support of the IWCAM Approach in Caribbean SIDS*.

The ultimate goal of the toolkit is to –

- promote the ratification of the Protocol Concerning Pollution from Land-Based Sources and Activities (the LBS Protocol) as a comprehensive tool to control, prevent, and/or reduce marine pollution;
- propose a mix of legal, institutional and capacity-building options that countries may exercise to implement the Protocol;
- recognise the influence and relationship of other Multilateral Environmental Agreements in the control of marine pollution;
- resolve the biggest practical challenge of inadequate resources – both human and financial – to harmonise domestic and international legal instruments on marine pollution.

The toolkit lays out instruments for government officials; assists in building capacity at regional and national levels to understand the requirements of the LBS Protocol; increases the understanding, awareness and skills of personnel responsible for drafting laws for protecting watershed and coastal and marine areas; facilitates the adoption of regional standards and thereby promotes best practices in IWCAM; enhances synergies among legal, technical and managerial approaches to implementing IWCAM; and offers information to update knowledge and skills with fact sheets, checklists and practical examples from other jurisdictions.

It is intended to be both an educational guide and a reference document, or a series of stand-alone modules to be used by practitioners such as technocrats, policy makers, legislative draftspersons, planners, developers and water managers. It can be used to introduce newcomers to integrated watershed and coastal area management systems. It can also serve as a reference source for case studies and model laws. The model laws provide a framework or starting point for countries to draft the necessary laws within the practiced legislative drafting style of the participating countries. They contain recommended regulatory language as well as annotations which provide guidance on how to customize the laws to best fit individual country needs.

It is acknowledged that when dealing with capacity building in the area of legislation, institutional frameworks and policy there can be no "one size fits all" product. It is also important to recognise that in many cases each GEF-IWCAM participating country has its own initiative including policies, governance guidelines and protocols related to IWCAM. The Toolkit is therefore de-

(Continued on page 3)

(Continued from page 2)

signed as a flexible tool to complement activities already underway in the respective countries and to track a country's progress towards IWCAM. The actions that each country takes will therefore change as a country tries to keep up with policy and other modifications as they occur. The model laws are therefore not intended to be adopted as is, but rather provide an approach that each country may adopt in developing its own legal framework.

When using the toolkit, it is strongly recommended that a team of technical, policy and legal experts be involved in developing the final law. To promote regional implementation, users of this Toolkit are encouraged to exchange experiences with other GEF-IWCAM participating countries in their efforts to build capacity and improve their legal and institutional frameworks for IWCAM.

The Toolkit is presented in seven parts: an introduction; five sections which promote actions - enabling laws, subsidiary legislation, policies, capacity-building and public awareness initiatives or institutional reform - that may be undertaken either individually or simultaneously depending on a country's circumstances, to establish a legal, policy and institutional framework for integrating watershed and coastal areas management to control and manage the pollution of inland and coastal waters; and a conclusion.

It may be found on the Project website at:

<http://www.iwcam.org/information/gef-iwcam-toolkits/gef-iwcam-legislative-policy-institutional-toolkit-may-2008>

For additional information contact the Project Coordinating Unit.

UNEP's Regional Coordinator visits GEF-IWCAM Project Coordinating Unit (PCU)

On May 13—14, 2008 Mr. Nelson Andrade, Regional Coordinator of the Secretariat of the Cartagena Convention (UNEP-CAR/RCU), accompanied by Christopher Corbin, AMEP Project Officer, visited the GEF-IWCAM PCU for meetings and held discussions with the Caribbean Environmental Health Institute (CEHI).



Signing of the MoU by Nelson Andrade and CEHI's Executive Director, Patricia Aquino.

Admiring the new Demo Project vehicle



During the mission, Mr. Andrade participated in the launch of a rainwater harvesting initiative at the GEF-IWCAM St. Lucia Demo site. He also signed an MoU with CEHI related to sewage assessments.

"Keeping the Main Thing the Main Thing"



GEF-IWCAM Demonstration Project Managers and Communications personnel met in Santo Domingo, the Dominican Republic, 26—28 May 2008 to develop their communications and public education strategies. They were guided by consultants Maria Protz, Edward Spang and the PCU Team.

Q: "What do you think are the biggest challenges to the adoption of coherent and consistent policies, laws, and regulations which promote an IWCAM approach? How can this toolkit help to overcome them?"

"The IWCAM project is in many ways pioneering the application of an integrated approach to watershed and coastal zone management. Such an approach imposes on the ground changes to both the legal and institutional frameworks in order to implement constructive water management reforms that will benefit countries and the region as the current reality often complicates achievement of integrated management goals.



Isabelle Vanderbeck, Task Manager, GEF Projects in Latin America & the Caribbean

Those changes to fragmentation of authority and responsibility for integrated water management and use require interactions amongst governmental agencies and private organizations, both nationally and internationally and are inevitable for more sustainable economic growth. They also require the "right tools" to modify the "bad laws," or legislation which actually impedes or disrupts integrated management "efficiency", resulting in limited national development.

Accordingly, the participating countries will have to attempt to reform their laws and enforcement systems in the process of their political efforts to strengthen the integrated management of watershed and coastal zones, to enhance the protection of the SIDS ecosystems, and to foster a common Caribbean approach to IWCAM.

The challenges reside mainly in forging general acceptance on common objectives and menus of actions to be taken by the relevant authorities and thereafter with regard to the adoption of legal structures ensuring perennality of the reform framework. Some countries have begun successful reforms through formal legal structures or "informal" mechanisms. But real change will come only when there is determination to change and a willingness to reduce (or somehow accommodate) the legal and institutional obstacles that prevent integrated water resources management.

It is thus expected that the IWCAM Kit will prove to be a useful and user friendly tool helping Caribbean nations to adopt coherent policies, laws, and regulations in support of the IWCAM principles."

Climate Change —One More Assault on Fisheries

The United Nations Environment Programme (UNEP) in a recent (February 2008) publication “In Dead Water – Merging climate change with pollution, over-harvest, and infestations in the world’s fishing grounds” reminded us that:

“The impacts of climate change on the marine environment are growing rapidly...

Unless other pressures are reduced in some of the primary fishing grounds, including bottom trawling and pollution, the impacts may become catastrophic, resulting in wide-spread death or strongly depleted fishing grounds, with severe impacts on countries, coastal economies, livelihoods and food supply.”

This article, written by Donna Spencer and Herold Gopaul, was part of a series of press articles published in regional newspapers in the lead up to the Fourth Caribbean Environmental Forum (CEF-4) which takes place 23–27 June 2008 in St. Georges, Grenada. See: <http://cehi.org.lc/Website/index.htm>

Anse la Raye Fish Fry on a Friday night in St. Lucia and Oistins weekly Fish Fest in Barbados – abundant fish of all kinds: snapper, king fish, flying fish, mahi mahi, shrimp, conch, lobster...grilled, stewed, fried...savoured, relished, enjoyed.

These weekly celebrations of abundance from the sea are the destinations of many tourists and locals alike. Throughout the Caribbean, communities like Anse la Raye and Oistins depend upon the sea. Fishing is essential to our food supply, supports the livelihoods of many, and contributes to our culture. The annual yield of lobsters from the shelves and banks of the Caribbean islands has a retail value in restaurants of approximately US\$40 million. Yet Caribbean fisheries are under threat.

The marine environment is subjected to many threats, foremost among them:



- Pollution from land-based activities
- Habitat loss
- Invasive species infestations;
- Over-harvesting of fisheries; and
- Climate Change

These threats, individually or combined, result in severe impacts on the biological production of the world’s oceans.

According to the Food and Agriculture Organization (FAO) capture of fish from the sea has declined or remained level since 2000. Local fishermen find that the size of their catch is steadily dwindling. Consumers buying fish can attest to its scarcity and rising cost.

Caribbean fisheries are threatened by the same factors

which affect global fisheries. Capture fisheries for 2001 for the Western Central Atlantic region, of which the Caribbean Sea is a part, were 1.7 million metric tonnes, minor when compared to global production figures of 92.4 million metric tonnes. All the major commercially important species and groups of species in the region are reported to be fully developed or over-exploited. Conch, for example, has been listed as *endangered* by the Convention on International Trade in Endangered Species (CITES).



In a recent paper on political organization and socio-economics of fishing communities in Trinidad and Tobago, Belize and Grenada, scientists pointed out that in the small-scale artisanal fisheries of Caribbean countries, the problem of collapsing fish stocks is extremely serious when one considers the relative dependence on fishing in coastal communities and its importance to the islands’ economies.

The problems are myriad. The Caribbean islands are surrounded by warm-water coral reefs. Corals, in addition to being beautiful living animals, are of vital importance to coastal fisheries. They have a narrow range of tolerance to water temperature, salinity, ultra violet radiation, cloudy water and nutrient levels. Even minor pollution can severely impact coral reefs and their ability to support thousands of fish species and other marine life. During the El Nino event of 1982/1983, sea surface temperatures in the Caribbean exceeded 29 degree Centigrade, which led to extensive bleaching of coral reefs throughout the Caribbean. In Jamaica the coral reef system experienced several stresses including coral reef bleaching which eventually

(Continued on page 5)

Exploring Approaches to IWCAM in Haiti

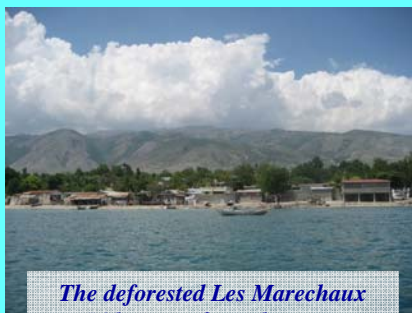
Haiti, one of the larger and more populated of the GEF-IWCAM Participating Countries, grapples with the challenge of integrating watershed and coastal areas management constantly. Perhaps more than any other nation in the region, deforestation and land degradation are critical issues in Haiti. According to the United Nations Food and Agriculture Organisation (FAO) total forest cover in Haiti is estimated at less than 3.8%, which contrasts with forest cover levels of 51.5% in the Bahamas, 61.3% in Dominica, and 44.1% in Trinidad and Tobago. The deforestation and related land degradation, exacerbated by poverty and urbanization, results in fatal landslides during heavy rains, poor agricultural opportunities, and significant land-based sources of marine pollution.



L. to r.: Joseph Ronald Toussaint, Christopher Cox, Daniel Brisard, and Vincent Sweeney

It was against this backdrop that Vincent Sweeney, (GEF-IWCAM Regional Project Coordinator) and Dr. Christopher Cox (Caribbean Environmental Health Institute Acting Programme Director) traveled to Haiti to familiarize themselves with the on-the-ground situation and collaborate with colleagues at the national-level about useful interventions which the project could undertake.

Their visit was hosted and facilitated by the Ministry of Environment, and primarily by Joseph Ronald Toussaint, the GEF-IWCAM Focal Point for Haiti. During their time in Haiti Mr. Sweeney and Dr. Cox held a series of formal and informal meetings with representatives from the Government of Haiti and other agencies working within and supporting Haiti, including the United Nations Development Programme Country Office; the National Tamarinier Laboratory of



The deforested Les Marechaux Ridge seen from the coast

(Continued on page 6)

(Continued from page 4)

led to total destruction of the country's coral reefs, with resulting losses in food production, tourism and the economy.

These coral reefs along with sea grass beds and mangrove swamps, are important as nurseries or shelters for various fish species but they are being damaged as more and more land is cleared for development.

The threat of climate change with its many impacts is now increasingly recognized as another assault upon world fisheries. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), the expert group assessing the latest scientific, technical and socio-economic data on the risk of human-induced climate change, states that the warming of the Earth's climate system is unequivocal. Increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level are all evidence of this.

Climate change will have many impacts upon the sea: rising surface water temperatures and significant sea level rise; changes in the wave climate, circulation, ice cover, fresh water run-off, salinity, oxygen levels and water acidity.

Just one of these effects, sea level rise, will result in a reduced amount of light reaching coral reefs and sea grass beds. Decreased stocks of fish would be one of the consequences of their destruction, as many fish species live and feed in and around the reefs.

Climate change therefore will add to the stress which our fisheries are already subjected to from unchecked coastal development, pollution, over-harvesting, disease and infestations by invasive species. In the midst of all this, heavy exploitation and depletion of fish stocks continues.

Saving fisheries means being careful not to over-harvest, reducing pollution from our land-based activities, managing our water resources responsibly, and development which is sustainable. Leaving a smaller carbon footprint i.e. using less energy, will help us save energy and money and play a responsible part in reducing climate change.

Learning more about the different factors which impact upon our fisheries and about the effects of our activities is a necessary first step towards making sure that the abundant fish which we enjoy today can also be enjoyed by our children and grandchildren in the future.

(Continued from page 5)

the Ministry of Agriculture, Natural Resources and Rural Development; **National Centre for Geospatial Information (CNIGS)**, and the United States Agency for International Development.

A field trip was also organised to downtown Port-au-Prince, in order to illustrate the severe problem of pollution of the marine environment due to activities within the capital city and then outside of Port-au-Prince, to the Arcadin Coast, where the impacts of coastal pollution from Port-au-Prince could be seen. The meeting with Ministry of Environment officials served to



Polluted waterway in Port-au-Prince

identify four main areas for consideration, in terms of priority actions in Haiti. These were identified by the Ministry of Environment as being:

1. Pilot application of GIS for monitoring watersheds and pollution problems in the coastal zone and the Bay surrounding Port-au-Prince.
2. Integrated Water Resources Management Planning and sanitation improvements.
3. Conduct of a follow-up regional/international seminar on Environmental Flows, using the Artibonite River watershed as a case study. This was proposed by Joseph Ronald Toussaint, who attended a Workshop on Environmental Flows, convened by IUCN and IW:LEARN in Iguassu Falls, Brazil, earlier this year, along with a representative from Cuba and one from St. Vincent (who was funded by GEF-IWCAM).
4. Laboratory strengthening.

On its visit to the **National Tamarinier Laboratory of the Ministry of Agriculture, Natural Resources & Rural Development (MARNDR)**, Dr. Millien, Director of the laboratory, which focuses on veterinary animal health and food safety, as well as water quality, described their efforts to expand the facilities and the support which the laboratory currently receives, including support from Argentina and Cuba. Its work includes animal and plant quarantine, diagnostics, quality control, toxicology, bacteriology, microbiology, virology, pathology, parasitology, and chemistry. The limitations of the laboratory facilities were highlighted. These include the need for equipment, reagents, additional human capacity and to improve analytical techniques.

A tour of the CNIGS' facilities demonstrated their capabilities to function as a lead agency for GIS pilot activities and to provide assistance to other GEF-IWCAM Participating Countries. Ms. Gina Porcena, Director of CNIGS, gave the visitors a tour of the facility.



Joseph Ronald Toussaint and Gina Porcena at CNIGS

CNIGS is integrally involved in the management of geospatial information and development of GIS capabilities for Haiti. It receives significant support from the European Union and is planning to look at watershed management as part of its activities under that programme. It was agreed that CNIGS would participate in a joint activity to examine a watershed at risk, which demonstrates the effects of multiple problems such as human-based pollution, erosion, sand-mining, irrigated agriculture and pesticide impacts. The parties agreed to identify a practical approach, build synergies with existing projects and that the problem to be addressed should help to provide information and support decision-making in a watershed which empties into the coastal zone. Suggested locations included the Arcadin coast.

The GEF-IWCAM Project is committed to working with Haiti to address issues related to integrated watershed and coastal areas management. Based on this visit and on-going communication, the project and Ministry of Environment are brainstorming on pilot activities to identify "hotspots" using GIS technologies and implement specific activities to mitigate some of the more damaging impacts of deforestation in these areas. Both GEF-IWCAM and the Government of Haiti are committed to making this intervention as effective as possible, and as such have been looking to other partners working in the area to ensure there is no duplication of effort and instead there are synergies.

While Haiti's challenges may seem overwhelming in comparison to other countries in the region, and the resources available are limited, the GEF-IWCAM Project is confident that small-scale application of the IWCAM approach is one possible way to address some of Haiti's pressing needs.





A look at environmental damage in the Lower Haina River Basin, Dominican Republic — or remembering why IWCAM is important

While on a field visit to the Lower Haina River Basin, site of the Dominican Republic's GEF-IWCAM Demonstration Project, in May I was struck by the contrast between this watershed and the Driver's River Watershed in Portland, Jamaica, the last one we had visited (in March 2008) and which was relatively pristine.

The Lower Haina River Basin is one of the main industrial conglomerations in the Dominican Republic. Within this River Basin there is a coal-fired electricity generating plant, a petroleum refinery and a vehicle battery factory amongst more than one hundred medium to large sized industries. The area has been highly contaminated by these industrial activities as well as by the solid and liquid wastes generated by the communities. It is home to very large unplanned or squatter settlements and the effects of the lack of planning and services are very apparent on the hills, along the river banks and in the water.

Yet the waters of this Basin are among the main fresh water sources of the capital city, Santo Domingo. I wondered how many people going about their daily business in the capital were aware of, or thought about, this. There is a great need for public education about the watershed and linkages between activities on land and their effects upon the very water we need.

I came away with a better appreciation of the huge challenge which is faced by the Demonstration Project Management Team. Their work to involve stakeholders, in particular the industrial sector, in interventions such as recycling, a heavy metal contamination survey to better guide policy and strategic planning, and overall integrated management programmes, will require energy, determination and support.

This field visit sure wasn't a walk in the park but the friendly children we encountered everywhere were enough reminder of why the Lower Haina River Basin, and others like it, need to be cleaned up as soon as possible.

Donna Spencer



The South Florida Water Management District – A Balancing Act

Donna Spencer attended the UNEP/IW:LEARN Information Technology Workshop which took place 2 – 6 June 2008 at Florida Atlantic University's Center for Environmental Studies in Boca Raton. While the training itself focused upon Plone open source software and website building, on Friday 6th June, participants in the Workshop visited the South Florida Water Management District (SFWMD) in nearby West Palm Beach.

This regional, governmental agency oversees the water resources in the southern half of the state of Florida which has one of the most diverse ecosystems in the world. It is the oldest and largest of the state's five water management districts and a centre of excellence. Its mission is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems and water supply.

This broad mission is achieved through a number of programs which include:

Coastal watersheds – the restoration of coastal watersheds and receiving water bodies through local initiatives and partnerships and applied scientific research; decreasing flood damages District-wide through flood management planning.

The Comprehensive Everglades Restoration Plan (CERP), an unprecedented State-Federal partnership which aims to restore, conserve and protect South Florida's ecosystem while providing for other water-related needs of the region, including water supply and flood protection.

Protection and restoration of natural systems in the northern Everglades (Kissimmee, Lake Okeechobee, Caloosahatchee and St. Lucie watersheds) by increasing storage capacity and water quality treatment.

Land Stewardship – the provision of natural resource protection, effective land management and reasonable opportunities for appropriate agricultural use, while allowing compatible recreational uses on designated public lands.

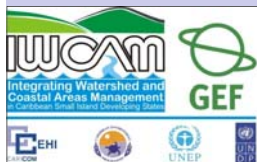
SFWMD's responsibilities also include: modeling and scientific support; operations and maintenance; regulation; and, ensuring an adequate supply of water to protect natural systems and meet all existing and projected reasonable-beneficial uses, while sustaining water resources for future generations.

Agnes Ramsey, Deputy Department Director, Everglades Restoration Planning, elaborated on SFWMD's ambitious 10 billion dollar, 35 year implementation plan to restore the Everglades. CERP is already helping to reduce the problems which for years have plagued the area: too much or too little water in the South Florida ecosystem; massive reductions in populations of wading birds; degradation of water quality; repetitive water shortages and salt water intrusion; declining estuary health; and as much as 1.7 billion gallons of water a day wasted to tide.

Department Director, Operations Control, Susan Sylvester, gave an overview of SFWMD's Water Management System. Part of this is the state's primary flood-control system, the Central and Southern Florida (C&SF) Project, which includes approximately 2,000 miles of canals and levees, hundreds of water control structures, dozens of pump stations, and numerous other facilities. Finally, the group was given the opportunity to tour the Operations Control Center – Science and Technology in Action!



Touring SFWMD's lobby and Operations Control



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

Contact Information:
IWCAM Project Coordination Unit
 P.O. Box 1111, The Morne, Castries, Saint Lucia
 Tel: (758)-452-2501/1412; Fax: (758)-453-2721
 E-mail: dspencer@cehi.org.lc