Training Workshop on Methodologies, Tools, and Best Practices for Managing Information for Decision-making on Sustainable Development in Caribbean SIDS

Unit for Sustainable Development and Environment,
Organization of American States
&
Division for Sustainable Development,
United Nations Department of Economic and Social Affairs

October 27-31, 2003
ISER, University of the West Indies,Trinidad and Tobago

IDSD WORKSHOP ON METHODOLOGIES, TOOLS, AND BEST PRACTICES IN INFORMATION MANAGEMENT FOR SUSTAINABLE DEVELOPMENT IN CARIBBEAN SIDS

INTRODUCTION

The utility and effectiveness of a decision is in direct proportion to the quality and availability of relevant information. Efficient information management greatly increases the probability of making timely, effective decisions. Furthermore, easy access to information on institutional procedures and frameworks increases the probability of being able to implement a decision once it has been taken.

One of the main objectives of the IDSD project was to train a cadre of resource persons in methodologies, techniques and tools related to general information management and as it related to four thematic areas of the project – Land use planning, Coastal Zone Management, Sustainable Tourism and Disaster Management/Climate Change. This capacity-building effort was based on a number of inputs, including the identification of priority issues and the identification of training needs, the identification of appropriate methodologies and tools, and the design of a training course to be implemented during the project.

The training course was performed during a workshop convened in Trinidad and Tobago in October 2003. Twenty-three participants from six countries – Barbados, Belize, Jamaica, St. Lucia, St. Kitts & Nevis, and Trinidad & Tobago – attended, amongst them representatives from national government; national and regional NGOs such as the Caribbean Network for Integrated Rural Development (CNIRD), the Caribbean Conservation Association (CCA) and the Belize Audubon Society; and specialized institutes such as the Caribbean Community Secretariat (CARICOM), the Caribbean Environmental Health Institute (CEHI), and the Organization of Eastern Caribbean States (OECS). Training was provided by representatives of Departments, Units or Centres from the three campuses of the University of the West Indies (UWI), as well as the University of Costa Rica. The development of the training materials was coordinated by the Caribbean Center for Administration for Administration and Development (CARICAD) – a regional agency. The Division for Sustainable Development of the UN Department of Economic and Social Affairs also participated as a trainer.

The training course addressed the three main pillars of sustainable development: economic, social, and environment, as well as the specific issues of development in the context of Small Island Developing States. Secondly, the training materials also covered the thematic areas of the project and provided specific training in those areas that related to tools, techniques, methodologies and approaches. Participants were introduced to basic concepts in information for economic, social, environment/natural resources and development, as well as to the basics in statistics and indicators for sustainable development, and were exposed to the applications of GIS in information management.

PRESENTATION SUMMARIES

Economic Issues in Decision-Making - *by Sharon Hutchinson & Marlene Attzs, UWI Sustainable Economic Development Unit (UWI/SEDU)*

The presenters examined the meaning and importance of economic concepts such as growth and development. They emphasized that whereas growth is an economic measure of performance, it is only the means to achieving development as a measure of human well-being. Therefore, it is development that one wishes to measure. Examples of development measures cited include adequate educational levels, freedom of speech, proportion of population below the poverty line, income gap ratio, sense of security, freedom of worship, etc. These indicators are explained, along with other, composite, measures of development, including HDI (human development index), GDI (Gender Development Index) GEM (Gender Empowerment Index), and HPI (Human Poverty Index). HDI, for example, measures average achievement of a country in basic human capabilities, health, income distribution, and education. The construction of these indices is illustrated with the example of HPI, which combines measures of longevity, in terms of percent of people expected to die before age 40; knowledge, using the rate of illiteracy; and lack of a decent standard of living, a composite index in itself which includes percent of people with access to health service and safe water and percent of malnourished children less than 5 years old.

The meaning of sustainable development is described, under the UNCED definition, as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs, where protection of the environment is required to achieve the sustainability objectives. This introduces the need to incorporate social and environmental concerns into economic decision-making. The economic goal of sustainable development therefore becomes: "… to maximize the net welfare of economic activities while maintaining or increasing the stock of economic, ecological, and sociocultural assets over time…. and providing a safety net to meet basic needs…". . *This presentation can be found at:* http://www.oas.org/usde/idsd/workshops/workshop10-27-31/01_SEDU%20%20Module%201%20for%20IDSD%20Oct%2013.ppt

Information Management for Social Aspects of Sustainable Development – *by Janice Cumberbatch, Sir Arthur Lewis Institute for Social and Economic Studies (SALISES)*

Ms. Cumberbatch started by reviewing the World Commission on Environment and Development's definition of sustainable development: *"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* She then examined different social aspects of sustainable development, including social, cultural, political, and institutional sustainability. The presenter then discussed social vulnerability as a result of several characteristics that challenge the achievement of sustainable development, and enlists those characteristics that make Caribbean SIDS particularly vulnerable. After discussing whether or not the characteristic of being small determines vulnerability, she concludes that determinants of vulnerability are more prevalent and more pronounced in small states than larger states.

Ms. Cumberbatch defines social vulnerability as a "reflection of the degree to which societies or socio-economic groups of people are affected negatively by stresses and hazards, whether brought about by external forces or intrinsic factors, that negatively impact on the social cohesion of a country." The characteristics that make Caribbean SIDS particularly vulnerable to climate change (low-lying, heavily dependent on tourism, small) are enlisted. Three methods are used to translate vulnerability to climate change into numbers, converting it into an index: component standardization, mapping on a categorical scale, and the regression method. The author then discusses the state of development of three types of vulnerability indexes, from less developed to more: economic, environmental, and social. The drawbacks and benefits of using indexes are discussed, as are their desirable attributes. Finally, the challenges to the collection of social data to feed these indices are discussed, and two best practices methodologies are described -- socioeconomic monitoring guidelines for coastal managers in the Caribbean, and risk assessment through social impact assessments, which would contribute social data to the risk assessment process. Social impact assessments are defined as a method of projecting the social consequences of actions that alter the environment.. *This presentation can be found at:* http://www.oas.org/usde/idsd/workshops/workshop10-27-31/02_TRAINING%20MODULE.doc

Decision-making on Integrated Coastal Zone Management – *by Marcia Creary, University of the West Indies, Centre for Environment and Development (UWICED).*

Ms. Creary introduces integrated coastal zone management (ICZM) as a continuous, interactive, adaptive, participatory, consensus-building process comprised of a related set of tasks, all of which must be carried out to achieve a desired set of goals and objectives, however they are specified, but in this case related to the management of the coastal areas. After reviewing the importance of the coastal zone to the Caribbean island-nations due to their reliance on the natural resources and services that it offers, Ms. Creary describes the coastal zone ecosystems and their value, including mangroves, estuaries, beaches, coral reefs, and seagrass. She then reviews the major uses of coastal resources in the Caribbean: fisheries, tourism and recreation, urban development, shipping and transportation, industrial and manufacturing activities, and shoreline protection. Finally, she gives an overview of the particular coastal zone development challenges faced by the region, including marine pollution, waste disposal, degradation of coastal ecosystems, depletion of the fishing stock, hazards and disasters, and land-use conflicts.

In discussing ICZM as a cross-sectoral, inter-agency, and multidisciplinary approach to the many and varied issues affecting the biological and physical and social resource base within the wider coastal and oceanic environment, Ms. Creary introduces the considerations that have to made for its application, including several levels of integration: intergovernmental, intersectoral, spatial, multidisciplinary, and international. Information gathering tools are required to provide information that allows the understanding of the coast's physical, biological, chemical and geological processes; of the concept of coastal health; of ocean and coastal biodiversity; of the functions performed by coastal ecosystems; of climate variability and climate change; of the structure and dynamics of coastal settlements; and of coastal resources management. Coastal management strategies, including zonation, coastal area protection, permits, setback areas, and development rights are enlisted. Finally, the author reviews regional initiatives in place in Barbados, Jamaica, and Saint Lucia. *This presentation can be found at:*

http://www.oas.org/usde/idsd/workshops/workshop10-27-31/03_Creary%20ICZM%20Module.doc

Sustainable Development Statistics, Indicators, and Decision-Making – *by Reena Shah, Division for Sustainable Development, United Nations Department of Economic and Social Affairs.*

Ms. Shah reviewed the uses and policy demand for statistics and indicators as key information tools for decision-making in sustainable development coming out of the United Nations Conference on Environment and Development (UNCED), the United Nations Commission for Sustainable Development (CSD), and World Summit on Sustainable Development (WSSD) meetings. She reviewed the purposes and criteria for the selection of indicators, including their role in defining objectives, assessing present and future direction with respect to goals and values, evaluating specific programs, demonstrating progress, measuring changes in a specific condition or situation over time, determining the impact of programs, and conveying messages.

Ms. Shah then focused on the CSD guidelines and methodologies for selection of indicators, discussing the framework and the methodology sheets applied to this purpose. Under this framework, a core set of 58 indicators with flexible adaptation at the national level has been adopted and classified under a system of themes and sub-themes, with methodology sheets developed for each indicator by a lead agency, and guidelines established for national implementation.

Ms. Shah identified several challenges in the use of sustainable development indicators, including a lack of data and development capacity, of international harmonization efforts, of further indicator development in "less advanced" substantive areas, and of training in integrated information management. The presenter then examined the UN Division for Sustainable Development's response to these challenges, in particular with regards to its work in Caribbean SIDS with regional and disaster reduction indicators. Finally, the presenter reviewed challenges particular to the development of environmental indicators in the region, including lack of coordination amongst agencies, indicator definition uncertainty, and lack of time series data. *This presentation can be found at:* http://www.oas.org/usde/idsd/workshops/workshop10-27-31/05_OAS_Workshop_21Oct2003.ppt

CDERA and the Integrated Decision-Making Support System (IDSS) – *by Donovan Gentles, CDERA*

Mr. Gentles briefly described the Caribbean Disaster Emergency Response Agency (CDERA)'s role as the regional agency in charge of disaster response and development of disaster response capabilities. In particular, he mentioned CDERA's role in managing the CDM (Caribbean Strategy on Comprehensive Disaster Management), constructed to integrate disaster response into the development plans of the region. The presenter described how CDERA's information policy led to the development of the Integrated Decision-Making Support System (IDSS), a management tool which incorporates geographic information systems (GIS), visualization, and analytical models, in order to respond to requirements for hazard analysis, risk and vulnerability assessments, mitigation and preparedness planning, and to provide education, training and

exercise support. Mr. Gentles described IDSS as a concept yet to be materialized, rather than as a unified hardware or software tool already in place, conceived to enable access, integration, sharing, and dissemination of timely and relevant information and knowledge, and the creation of a common operating environment for improved planning, collaboration, decision-making and execution. Mr. Gentles described the many political and technical challenges and constraints confronting the development of IDSS, but emphasized that the emergency management field is heading in this direction. *This presentation can be found at:* http://www.oas.org/usde/idsd/workshops/workshop10-27-31/06_IDSS%20Pre%20for%20IDSD%20in%20TT.ppt

Climate Change and the Caribbean: the Case and the Responses - *by Ian C King, Adapting to Climate Change in the Caribbean (ACCC) Project*

Mr. King gave an overview of the evidence supporting the occurrence of climate change, as well as the potential impacts of climate change to the Caribbean. Expected impacts from global warming in the Caribbean, including: saline intrusion into freshwater aquifers, and coastal flooding and erosion due to sea level rise; heat stress, coral bleaching, loss of biodiversity, and increased emergence of vector borne diseases due to increased temperatures; droughts or floods, and decreased fresh water availability due to changes in rainfall patterns; and direct damage of infrastructure and loss of lives due to increased intensity of storm activity. The resulting economic costs to the region estimated in terms of potential revenue loss from tourism and infrastructure damage to several economic sectors are estimated as ranging from 3.5% to 16% of the region's GDP (US $1.5 billion per year) in a low increase scenario to 2050, and from 24% to 103% of GDP (US $9 billion per year) in a high increase scenario.

Mr. King then gave an overview of the regional response to the threat posed by CC, in the form of adaptive strategies developed by the CPACC program. CPACC's overall objective was to support Caribbean countries in preparing to cope with the adverse effects of CC, particularly sea-level rise in coastal areas, through vulnerability assessment, adaptation planning, and related capacity building. Mr. King then reviewed the ACCC and MACC projects, implemented as follow-up efforts to CPACC, and which are currently ongoing. While ACCC has ensured the continuation of capacity building efforts initiated under CPACC, MACC's central objective is the integration of climate change policies and risks into sectoral planning. Both projects will be enhanced by the establishment of the Caribbean Community Climate Change Center (CCCCC), to function as an executing agency for future regional climate change projects and to serve as a coordinating center for all regional climate change-related activities. *This presentation can be found at:* http://www.oas.org/usde/idsd/workshops/workshop10-27-31/07_IDSD%20CC%20Adapt%20%20Activities.ppt

Coastal Zone Management and Global Climate Change – *by Ian C King, Adapting to Climate Change in the Caribbean (ACCC) Project*

Mr. King reviewed the economic and environmental importance of coastal zone areas to the Caribbean SIDS. The coastal zone has a high concentration of economic activity and infrastructure, with 40% of the population within 2km of coastline, and with tourism (based on coastal zone activities) representing 25-35% total Caribbean earnings. The coastal zone of the

Caribbean is an area of extreme ecological importance as well, and includes several habitats relevant to biodiversity such as coral reefs, sea grass beds, mangrove swamps, and beaches. Mr. King then examined the factors that contribute to coastal vulnerability to climate change, including the presence of land-use and resource allocation conflicts, the degradation of coastal resources, the depletion of fish stocks, declining water standards from land based activities, and the inherent vulnerability to natural hazards due to geographic considerations. These factors would compound expected impacts from climate change on the coastal zone, including submergence of low-lying wetland and dry land areas, erosion of soft shores by increasing offshore loss of sediment, increased salinity of estuaries and aquifers, rising coastal water tables, and more severe and frequent coastal flooding and storm damage.

Mr. King reviewed potential adaptive responses, including the use of regulations, land use planning, economic and market-based incentives, public awareness campaigns, and research and monitoring activities. Mr. King then described CPACC's coastal vulnerability and risk assessment component, implemented as three pilot studies in Barbados, Guyana, and Grenada. In each country, a screening assessment of the biophysical and socioeconomic impacts of sea level rise on coastlines was conducted by applying UNEP's methodology for vulnerability assessment, by using the Brunn rule to determine beach erosion, and by employing IPCC climate change scenarios for 2020, 2050, and 2100. In all cases, very significant impacts on Caribbean countries and coastal areas were expected, due to factors mentioned above, and country-specific adaptive measures and recommendations were enlisted. Recommendations were made for all three countries in addressing their impacts.

The Coastal Resources Information System (CRIS): An Approach to the Development of a Decision Support System – *By Ian King, Adapting to Climate Change in the Caribbean (ACCC) Project*

Mr. King explained the development of the CRIS as part of the objectives of Component 3 of the CPACC Project, which were to develop a facility to enable wide access to coastal spatial data and monitoring capacity for the purpose of decision making, to develop the capacity within local institutions to apply and adapt the facility to meet institutional and national needs, and to promote sustainable data management. CRIS was developed through a process which started by assessing the state of coastal data in the Caribbean countries, followed by the cataloging the same data, establishing a database, collection of data where incomplete, conversion of the data to be included in the database, implementation of the database, and finally establishment of a training program for its use.

The CRIS' structure includes a spatial database stored within a GIS, and an attribute database with non-spatial attribute data stored in a relational database. The implementation of CRIS required a capacity building process, which included identifying key agencies, training of key personnel, provision of support tools, and sponsoring and participation in conferences and courses. CRIS successes have included the establishment of a community of GIS practitioners, the development of national and regional capacity, and the development of metadata for the countries. There are still challenges surrounding long-standing institutional approaches to data collection and management that have not been completely overcome. In the future, CRIS could become web-enabled, providing access to a wider range of users, and also adapted to sector-

specific approaches. *This presentation can be found at:* http://www.oas.org/usde/idsd/workshops/workshop10-27-31/08_IDSD%20CRIS%20Overview%20%20Way%20forward.ppt

Managing Information for Decision-making in Land Use Planning – Overview of Concerns Relating to Sustainable Land Use Planning and Agriculture in SIDS – *by Glynnis Ford, UN Food and Agriculture Organization*

Ms. Ford reviewed the issues that need to be addressed to ensure sustainable land management in Caribbean SIDS. These include shortages of arable land, land degradation, loss of agricultural land to urbanization, water shortages, biophysical constraints, socio-economic constraints, and a changing political climate. The characteristics of the two agricultural systems present in SIDS, production and subsistence farming, were then discussed and compared in the context of sustainability. Sustainability concerns included declining yields, the influence of soil-borne and other diseases on production, declining soil fertility, pollution of ground water, and soil salinity.

Under this context, the informational issues and challenges to be overcome in different areas relating to sustainable land use were examined, including those pertaining to water, soil, climate, land cover and biodiversity, and land use, crop, and production systems. For example, in terms of climate databases, the challenges relate specifically to data incompleteness. Thus, while all countries have a network of meteorological stations to observe and document climate and weather conditions, in areas of difficult access these stations may be wide apart, and with a limited number of recording years resulting in time gaps; additionally, there is an incomplete range of attributes needed. In terms of land use and crop production systems, there are informational challenges of a more diverse nature. In this area, in addition to data incompleteness, there are data classification and data relevance issues: a lack of practical, simple and widely accepted method of describing land uses and production systems, and a need to classify land uses according to their inherent sustainability. In all areas, the presenter identified limitations in data availability and data quality at all scales, especially those that require substantial ground truthing, and a lack of metadata and protocols for data collection. The author concludes there is a need to identify a set of sustainable land use indicators and orient data collection in this sense. *This presentation can be found at:*
http://www.oas.org/usde/idsd/workshops/workshop10-27-31/09a_fao-oas%20present%201.ppt

Automated Land Information System (ALES) - *by Glynnis Ford, UN Food and Agriculture Organization*

Ms. Ford presented the ALES as a computer program that allows land evaluators to build expert systems to evaluate land for agricultural purposes, according to the guidelines presented in the FAO "Framework on Land Evaluation". ALES utilizes a two-stage land evaluation approach. The first stage is a physical land evaluation, conducted by matching soils, climate and land use with crop requirements. The second stage is a socio-economic evaluation, conducted to derive the suitability of the land unit for specific land utilization types (e.g rain-fed agriculture with low inputs or commercial agriculture with high inputs, etc.) ALES' components include: a framework for a knowledge base describing proposed land uses in both physical and economic terms; a framework for a database describing the land areas to be evaluated; an inference mechanism to relate these two, thereby computing the physical suitability of a set of map units for a set of proposed land uses; a report generator; and an import/export module that allows data to be exchanged within external databases, geographical information systems, and spreadsheets. ALES therefore constitutes a decision-support system for the allocation of land, by providing

measurable indices for sustainable land management, a selection of agricultural land use alternatives, and an identification of under-utilized land and crops suitable for these lands. *This presentation can be found at*: http://www.oas.org/usde/idsd/workshops/workshop10-27-31/09b_fao-oas%20present%202.ppt.

Applying Geographical Information Systems to the Territorial Organization of Coastal Zones – *By Eduardo Gutiérrez-Espleta, Development Observatory, University of Costa Rica*

Dr. Gutiérrez-Espleta explained that the concept of territorial organization, though not fully established yet as a differentiated practice from others such as urban studies, and economic and environmental planning, is gradually being oriented toward the definition and management of territorial models suitable to supra-local areas. Territorial structures and systems are identified through the use of models, lending internal cohesion to territorial organization and integrating it into larger spaces, and distinguishing areas or zones requiring differentiated treatment or regimes. To achieve this purpose, territorial organization makes use of prospective techniques that make use of reasonably scientific affirmations about problems and the options in the future. Among prospective techniques are those of simulation and the scenario method, used to simulate, stage by stage and in a plausible, coherent fashion, a succession of events leading a system toward a future situation, illustrated by a comprehensive image of the situation.

He then introduced the use of Geographic Information Systems (GIS) as technology applied to the solving of territorial problems. He explained a GIS is a computer program with specific capacities, whose subsystems or logical components may include data entry functions, information output/graphic and cartographic representation functions, spatial information management functions, and analytical functions. Structurally, a GIS is comprised of a data sphere, and a processing sphere. The advantages and disadvantages of the two GIS data representation models, raster based and vector based, were explained.

Finally, Dr Gutiérrez-Espleta described the current and future trends in GIS use, including its integration into traditional Database Management Systems (DBMS) now known as Spatial Database Management Systems (SDBMS), which will make it possible to extend the range of action and the importance of GIS in businesses and institutions. Likewise, a clear trend has also been observed toward an integration of GIS with web applications, allowing GIS to be used over the internet, and the application of GIS for specialized uses, integrating it with economic and ecological models.

Elements for the development of environmental variables, indicators, and indices – *Edgar Gutiérrez-Espleta, Development Observatory, University of Costa Rica*

Dr. Gutiérrez-Espleta introduces the use of indicators and indices serving as “mediators” between science, politics, and public opinion, by synthesizing and quantifying relationships and complex processes. He describes the concept of the information pyramid, where the more aggregated the information is, the more useful it is for higher levels in the decision making process; indicators and indices are at the top of the pyramid. The development of useful environmental indicators and indices requires not only an understanding of concepts and definitions, but also a thorough knowledge of policy needs.

Dr. Gutiérrez-Espleta explained that different approaches could be taken to develop environmental indicators under the sustainable development paradigm. They must be able, however, to fulfill the challenge of fully integrating the social, economic, environmental, and institutional aspects of sustainable development. The national decision-making process requires indicators responsive to change, supported by reliable, readily available data, relevant to the issue, and understood and accepted by intended users. Depending on the number of environmental/societal characteristics selected for use in an indicator, it can be classified as a first (one environmental), second (more than one environmental), third (one environmental, one societal), fourth (more than one environmental, one societal) or fifth generation (more than one environmental, more than one societal) indicator.

Dr. Gutiérrez-Espleta emphasized that, for the construction of indices, it is necessary to use a conceptual framework that defines precisely the terms that will be used and that establishes the theoretical dimensions of the concept to ensure it is well understood. The elaboration of the conceptual framework includes two stages: 1) the exhaustive revision of the literature and 2) the adoption of a model. In order to give a concept an operational definition, a set of variables that could be included in the indicator has to be chosen. This selection is based on the degree to which the variables seem to be valid indicators of the dimension or sub-dimension under study, and would consider aspects of need, cost, quality, public interest, and political relevance. Once the index is constructed, it is necessary to validate it either through correlating it with the variables that were used to construct it, or through the use of external criteria that measure the same or something similar to what one is trying to measure with the indicator or index. *This presentation can be found at:* http://www.oas.org/usde/idsd/workshops/workshop10-27-31/04a_Elements%20for%20dev%20of%20enviro%20vars,%20etc.doc

Sustainable Tourism - *by Sharon Hutchinson & Marlene Attzs, UWI Sustainable Economic Development Unit (UWI/SEDU)*

The presenters gave an overview of sustainable tourism, its definition, and goals. They applied an operational definition of sustainable tourism in SIDS as tourism that is sensitive to the ecological fragility of small island states but which provides significant and sustained economic growth via employment and income, and that simultaneously maintains or enhances the social fabric of the community in which such tourism development occurs. They contrasted traditional tourism characteristics with those of sustainable tourism, where traditional tourism tends to be high-density, with a coastal concentration, on a large scale, and where the ownership of hotels and tourism facilities tends to be foreign and multinational, while sustainable tourism, on the other hand, tends to be geographically dispersed and low-density, of a smaller scale, and of the locally-owned, small-business variety.

They highlighted the concept of carrying capacity as key to measuring the fulfilment of sustainable tourism goals, and reviewed several indicators of carrying capacity that have been applied to this end; these included general indicators (use intensity, degradation) and SIDS-specific indicators (currency leakage, percent local ownership of businesses). The rationale behind the use of each of these indicators was then explained. Traditional economic concepts such as production choice, willingness to pay, contingent valuation, travel cost, and cost-benefit

analysis are reviewed as they apply to the valuation of environmental goods, and the protection of environmental areas potentially impacted by tourism.

From Measurement to Management: Indicators of Sustainable Tourism Development in the Caribbean and the CTO Management Information System for Tourism (MIST) – *by Gail Clarke, CTO*

Ms. Clarke explained that the primary source of tourist information used in the analysis of tourism data for Caribbean destinations is the entry/departure (E/D) card, which ideally contains information on the number of visitors to a destination, the main country or countries of origin of these visitors, the main purpose of visit and place of stay, the age, sex, and income demographics of the traveler, and some indication of first time versus multiple visits to the destination. Other sources of information are visitor surveys, surveys of tourism product suppliers, statistical and other publications from destinations, the WTO, source markets reports, travel and other publications, journal interviews and industry surveys, and the internet.

Ms. Clarke then described the development of the MIST, conceived to improve the ability of the Caribbean destinations to manage and develop a sustainable tourism industry, enhance their ability to respond to the changing market environment in which they operate, and to enhance their management capability through strengthening the information infrastructure. The MIST is a nationally and regionally integrated Management Information System, comprising three main components: 1) a performance component, containing a database of arrival/departure statistics, annual economic indicators, etc.; 2) a product inventory component, containing a database of tourism facilities (accommodation, cruise, carriers, attractions, etc., and destination information); and 3) a marketing database of source market information and marketing intelligence. *This presentation can be found at:* http://www.oas.org/usde/idsd/workshops/workshop10-27-31/11_summary%20of%20OAS%20Presents.doc

DISCUSSION

The discussions during the training sessions and between sessions were fruitful and meaningful. There was significant discussion on the issues of Coastal Zone Management, Sustainable Tourism and Climate Change.

Specifically:

- Discussion re changes in the thinking on what can be termed "economic development" and whether a change had taken place at the fundamental level of policy and decision-making;
- Whether sustainable development was realistically achievable given the challenges and other incipient concerns with economic and social development issues;
- some participants expressed skepticism about climate change, its potential and if it was already occurring. Mr King responded by ably identifying signs and research positing that significant fluctuations were occurring which could suggest that a change could be imminent;
- participants expressed an interest in the social aspects of sustainable development issues and how these could be appropriately reflected in planning, thinking and decision-making;

- there was a debate regarding the true nature of sustainable tourism and "green tourism", "sustainable tourism" versus "eco-tourism". There was some concern that some “so-called green” tourism activities should not be so termed and that in fact critical interventions and decisions were lacking in truly making tourism activities more sustainable. A number of examples were cited from the region and from Trinidad and Tobago where in community-led and driven processes were reaping long-term environmental, social and economic benefits.
- Participants expressed concern about the lack of significant hands-on training and the possibility of working directly with some of the software packages identified.
- The issue of sustainability at its most critical – in terms of it very feasibility and whether it was compatible with economic drivers was also discussed at some length by participants. Also included in the discussion were the types of tools that could feasibly support this process.
- There was significant interest in the GEO-SIEAN software and on the tools presented by Jose Gerhartz and Edgar Gutierrez-Espleta. Participants requested that the packages be made available to them and were assured that the material would be available via the web.
- Participants identified a need for more regional examples of the implementation or use of the methodologies, tools and approaches identified.
- There was discussion regarding the status of the IDSS and the nest steps in its operation. Equally, participants queried how soon it would be active or the role it could play as part of an early-warning and response system. They also wondered how many countries were involved at this stage and the potential for further involvement.
- The need for more work on the socio-economic monitoring and information was identified. Participants noted that this aspect was still lacking in some respects.
- Participants expressed satisfaction with the practical exercises and made suggestions and recommendations for inclusion in the SocMon tool particularly as it related to “use of resources: in terms of coastal zone management”.

Next Steps and Way Forward

This section of the programme involved a brief overview by the Project Manager, Ms. Leisa Perch, regarding where the workshop stood within the framework of the project and what the foreseeable next steps were. At this point, Ms. Perch also indicated that there were evaluation forms, which sought the honest reflections of the participants including recommendations for improvement and most particularly for next steps.

Ms. Perch noted that the workshop was seen as a key fundamental activity in the project both in terms of providing additional material and training but also in seeking to further identify the critical areas where interventions are needed. She noted that the workshop provided an opportunity for the material to be tested and to evaluate what was positive and negative about the present structure and also areas that could be improved – which would facilitate their further finalization. Even though some of the material was basic, given that the material would be on the web and available for use and download, she noted that given its access by the public it must start off from a basic level, given that the target audience would in fact include students, academia, and inexperienced technical personnel as well as more experienced professionals. For

those more experienced, it could serve as a refresher course or as part of a continuous training programme.

Following the workshop, the following steps were identified:

- uploading the materials on the web;
- distributing a revised CD to participants;
- the identification and procurement of equipment with an emphasis on software; and
- the identification and provision of short courses at the national level to coincide with the installation of equipment.

Country representatives were asked to discuss amongst themselves and to identify in a very preliminary way where they felt technological support through hardware and software could facilitate their present and future efforts in information for decision-making. Though countries could not speak specifically due to the lack of notice, some did identify areas for support. Specifically, Jamaica identified GIS and land use planning as a key area and Barbados identified equipment such as computers and ARCPAD that would support the Ministry of Environment and the overall Ministry approach to Environmental Information and Indicators.

It was noted by the IDSD project Manager that the intention was to support training at the national level to complement the installation of new equipment and that she would follow-up with each country Focal Point on this issue.

A representative from St. Kitts and Nevis raised a question regarding their role in the project. The project manager noted that St. Kitts and Nevis had been included because of a specific request by FAO to provide them with some exposure to ALES. The project could continue to facilitate access to methodologies and tools but additional support was limited to the four participating countries.

Closing

After the discussion on Next Steps, the IDSD Project Manager thanked the participants and the trainers for the exciting discussions and deliberations. She noted the excellent efforts of the trainers to provide materials that were relevant and easy to absorb and the identification of tools and methodologies that could assist countries. She thanked the participants for their patience regarding delays and coordination challenges and hoped that they had found the material useful and the workshop informative. She noted the participation of the three campuses of the University of the West Indies in this program and also the contribution from the University of Costa Rica. The IDSD Project Manager also extended appreciation to ISER for the loan of their training room and to SEDU for the excellent supportive role they played in addressing difficulties that arose during the workshop e.g. coordination and logistics.

Trainees also extended their thanks and appreciation to the trainers, citing the course elements, which they had found most relevant and interesting. One trainee on behalf of the workshop also thanked the IDSD project Manager for the coordination of the workshop and the course.

The workshop concluded at this point.

Summary of Comments on the Workshop

1. *Overall evaluation of the workshop:* Overall, the comments indicate a general satisfaction with the value of the workshop, with clear majority giving it a rating of 3 out of 4. Although some comments indicated that parts of the material were familiar to them, most comments reflect knowledge gained in some, if not all, of the subjects touched upon by the workshop. There was a general consensus that the workshop increased the level of awareness on the issues and techniques related to information management in sustainable development, and would help the participants to make more informed decisions related to planning and/or in deciding which kind of computer software and programs would be of interest to their organizations. The establishment of a network of information management personnel was mentioned as a major contribution of the workshop. Everybody stated a belief that the materials coming out of the workshop would be used as a reference. There was a generally good impression on the instructors' knowledge and ability to convey the subject material.

2. *Favorite topics:* Technical topics seemed to be of major interest, with decision-support systems, GIS, and the development of indicators more frequently mentioned as subjects of interest. However, exposure to theoretical issues on sustainable development, climate change, and land use planning seemed to be appreciated as well in some cases if not all. Several comments expressed a desire to delve deeper into integrated development planning issues/techniques.

3. *Main criticisms:* The main criticisms were directed towards what was perceived as an excessive emphasis on/time allotted to the theoretical aspects of the workshop vs. the practical hands-on training modules. Another common criticism, related to the previous one, was that the daily schedule was too long and therefore the last sessions on each day suffered from lack of attention from the participants due to tiredness/information overload. The impression on the quality of workshop materials varied somewhat and from the comments, it seems that whenever there was a criticism in this regard it related to the issue of the length and perceived repetition of some subject material by various presenters.

4. *Other comments:* A majority of the comments expressed a desire for follow-up workshops of a more hands-on nature that developed specific subjects and/or techniques further. Thus, separate specialized workshops on GIS, development of indicators, decision-support systems, and information management under each of the four general thematic areas was suggested. There was also mention of the need to use regional case studies to better illustrate the practical application of the techniques, and to relate it to local needs/experiences.

LIST OF WORKSHOP PARTICIPANTS

Title	First Name	Last Name	Organization	Address	Phone	Fax	Email
Mr.	Earl	Bailey	Jamaica Institute of Planners	University of Technology, 237 Old Hope Road, Kingston 6, Jamaica	876-927-1680		earlplanner@hotmail.com
Ms.	Natalie	Boodram	CEHI	P.O. Box 1111, The Morne, Castries, St. Lucia	758-452-2501	758-453-2721	cehi@candw.lc; natalieboodram@hotmail.com
Ms.	Debra	Branker	Barbados National Trust	Wildey House, St. Michael, Barbados	(246) 426-2421	(246) 429-9055	wings2runfree@hotmail.com, natrust@sunbeach.net
Ms.	Malikah	Cardona	MNREI, Physical Planning Section	Market Square,Belmopan, Belize	501 8222226, 8222711	501 8221526	lincenbze@btl.net, peachmc@hotmail.com
Mr.	Bryan	Farrell	Department of Environment	Ministry of Health & Environment, Pelican Mall, Basseterre, St. Kitts	869 465 4970	869 466 3915	rasbenjie@hotmail.com
Mr.	Glenn	Goddard	Environmental Management Authority	8 Elizabeth Street St. Clair Port-of-Spain	(868) 628 80 42	(868) 628 91 22	ggoddard@ema.co.tt
Mr.	Ron	Goodridge	Coastal Zone Management Unit	Bay Street, Bridgetown, St. Michael, BARBADOS	246-228-5950	246-228-5956	coastal_planner@coastal.gov.bb

Title	First Name	Last Name	Organization	Address	Phone	Fax	Email
Ms.	Karen	Hackshaw	Caribbean Conservation Association	Bush Hill, The Garrison, St. Michael, Barbados	246-426-5373	246-429-8483	reic@ccanet.net
Mr.	Kirk	Haughton	National Environment & Planning Agency	1 Lina Close, Portmore, Jamaica	876-906-2730		khaughton@nepa.gov.jm
Mr.	Daune	Heholt	Ministry of Physical Development Environment and Housing	Min. Physical Development Env and Housing, PO Box 709, Conway, Castries, Saint Lucia	758-468-4438	758-452-2506, 758-451-6958	dheholt@planning.gov.lc, dcp@planning.gov.lc
Mr.	Gene	Knight	Department of Agriculture	P.O. Box 39, La Guerite, Basseterre, St. Kitts	(869) 465-2335	(869) 465-2928	doastk@caribsurf.com
Mr.	Michael	Link	Belize Audubon Society	12 Fort Street, PO Box 1001, Belize City, Belize	501-223-5004/4987/4988	501-223-4985	research@bas.bz, datamanager@bas.bz
Ms.	Dulcie	Linton	Center for Marine Sciences	University of the West Indies, Mona, Kingston 7, Jamaica	876-927-1609, 876-977-0262	876-977-1033	dmlinton@uwimona.edu.jm, dulcie.linton@uwimona.edu.jm
Ms.	Jeanne Majella	Louis	National Statistics Department	50 Chrekei Bldg., Micoud St, Castries, St. Lucia	1 758 4523716/1 758 4524410	1 758 4518254	majellalouis@hotmail.com, statsdept@candw.lc
Mr.	Anthony	McKenzie	National Environment & Planning Agency	10 Caledonia Ave., Kingston 10, Jamaica	876-754-7550	876-754-7592	amckenzie@nepa.gov.jm

Title	First Name	Last Name	Organization	Address	Phone	Fax	Email
Mr.	Anthony	Mills	Caribbean Regional Fisheries Mechanism	P.O.Box 642, Princess Margaret Dr., Belize City, Belize	501-223-4443	501-223-4446	mills@caricom-fisheries.com
Mr.	Raymond	Mossiah	Belize Tourism Board	Level 2, Central Bank Building, Gabourel Lane, P.O. Box 325, Belize City, Belize	501-223-1910/1913	501-223-1943	raymond@travelbelize.org
Ms.	Tracey	Oliveira	Ministry of Public Utilities and the Environment	Sacred Heart Building, 16 – 18 Sackville Street, Port-of-Spain, Trinidad W.I.	(868) 624-6024	(868) 625 - 7003	environment@tstt.net.tt; tracey_oliveira@hotmail.com
Ms.	Indira	Persaud	CARICOM Secretariat	Eddy Grant Building, High Street, Georgetown, Guyana	(592) 226 9280-9, (592) 225 2961-5, (592) 225 8850-1	(592) 226 6091, (592) 225 7341	stats2@caricom.org
Ms.	Martina	Regis	Ministry of Physical Development Environment and Housing	PO Box 709, Conway, Castries, Saint Lucia	758-468-4463	758-452-2506, 758-451-6958	mkregis@planning.gov.lc
Mr.	Travis	Sinckler	Ministry of Housing, Lands and the Environment	Environmental Special Projects Unit, #1 Sturges, St. Thomas,	246-438-7761	246-438-7767	espu@caribsurf.com, mbouh8@yahoo.com

Title	First Name	Last Name	Organization	Address	Phone	Fax	Email
				BARBADOS			
Ms.	Zakiya	Uzoma-Wadada	CNIRD		868-662-6473	868-645-5936	cnird@carib-link.net; zwadada@hotmail.com
Ms.	Naula	Williams	Organisation of Eastern Caribbean States (OECS)	Morne Fortune, P.O. Box 179, Castries, St.Lucia	(758) 453 1920, (758) 452 2537 ext.8136	(758)453 1628	nwilliams@oecs.org; naulawilliams@hotmail.com
TRAINERS							
Ms.	Marlene	Attzs	SEDU/UWI	Department of Economics Development Unit St. Augustine Trinidad & Tobago	868 662 9461	868 662 6555	mattzs@hotmail.com
Ms.	Gail	Clarke	Caribbean Tourism Organisation	One Financial Place, Collymore Rock, St. Michael, Barbados	246-427-5242	246-429-3065	gclarke@caribtourism.com
Ms.	Marcia	Creary	UWICED	UWI, Mona Kingston 7 JAMAICA	(876) 927-1609	(876) 977-1033	mcreary@uwimona.edu.jm
Ms.	Janice	Cumberbatch	SALISES	14 Ocean City St. Philip Barbados	(246) 416-4887	(246) 416-4887	jancum@caribsurf.com
Ms.	Glynis	Ford	FAO/Ministry of Agriculture	14 LIGNUM WAY, BARBICAN TERRACE, Jamaica	1-876-977-0849		gford@cwjamaica.com

Title	First Name	Last Name	Organization	Address	Phone	Fax	Email
Mr.	Donovan	Gentles	CDERA	Bldg 1, Manor Lodge, Lodge Hill, St. Michael, Barbados	(246) 425 0386	(246) 425 8854	dg@cdera.org
Mr.	Jose	Gerhartz	UWICED	3 Gibraltar Camp Road University of the West Indies Mona, Kingston 7 Jamaica	(876) 977-1659 /5413/5545/1660-9 (Ext. 2363)	(876) 977-1658	jgmuro@uwimona.edu.jm; pepegerhartz@yahoo.com
Mr.	Edgar	Gutierrez-Espleta	Costa Rica Development Observatory, University of Costa Rica	Universidad de Costa Rica San José 2060 Costa Rica	(506) 207-4878 /9	(506) 283-7563	egutierr@cariari.ucr.ac.cr
Ms.	Sharon	Hutchinson	SEDU/UWI	UWI - St. Augustine, Trinidad	(868) 645-3233 /662/2002 Ext. 2444		shutchinson@fans.uwi.tt
Mr.	Ian	King	CARICOM/ACCC RPIU	Lazaretto Complex,Black Rock,St. Michael, BARBADOS	(246) 417-4579/80	(246) 417-0461	kingcpacc@sunbeach.net
Ms.	Reena	Shah	UN Department of Economic and Social Affairs	DC2-2262, 2 UN Plaza, New York, NY, 10017, USA	1-212-963-4586	1-212-963-1267	shahr@un.org
OTHER PARTICIPANTS							
Ms.	Leisa	Perch	Organization of American States	1889 F St NW, #622-A, Washington, DC, 20006	202-458-3228	202-458-3560	lperch@oas.org

Title	First Name	Last Name	Organization	Address	Phone	Fax	Email
Ms.	Angela	Skeete	CARICAD	Weymouth Corporate Centre, Roebuck Street, Barbados	246-427-8535	246-436-1709	askeete@caricad.net