Meeting on methodologies for disaster assessment – A regional approach
Port-of-Spain, Trinidad and Tobago
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# REPORT OF THE MEETING ON METHODOLOGIES FOR DISASTER ASSESSMENT-A REGIONAL APPROACH

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### REPORT OF THE MEETING ON METHODOLOGIES FOR DISASTER ASSESSMENT-A REGIONAL APPROACH

#### **Background**

The Economic Commission for Latin America and the Caribbean (ECLAC), the Organization of Eastern Caribbean States (OECS), the United Nations Development Programme (UNDP) - Barbados and the OECS, and the Caribbean Disaster Emergency Response Agency (CDERA) convened a meeting on the theme "Methodologies for Disaster Assessment - a Regional Approach", from 27 February to 1 March 2007 in Port of Spain, Trinidad and Tobago.

The purpose of the meeting was to present and analyze existing methodologies as well as ongoing initiatives in the area of disaster assessments in the Caribbean subregion with a view to identifying areas of future collaboration in the optimal use of these methodologies so as to facilitate greater effectiveness in addressing disasters. This had become necessary given the damage that disasters had wrought on the subregion resulting in tremendous economic, social and environmental losses.

In view of the recurrence of natural disasters in the Caribbean and their devastating impact on the sustainable development of Caribbean countries, in 2001 the Caribbean Community (CARICOM) adopted a Strategy and Results Framework for a Comprehensive Disaster Management (CDM). The goal was to link the CDM to national development decision-making and planning. Moreover several international, regional and national agencies, institutions and organizations had also given their support to disaster assessment in specific components (such as risk reduction and vulnerability assessments of the impacts of disasters) subject to different mandates. Five years after embracing the CDM against a background of recent global catastrophes, there is a recognized desire among disaster management stakeholders in the Caribbean to review the CDM achievements to date and revisit and sharpen its results focus, and to accelerate initiatives in promoting disaster risk and disaster loss reductions within the CDM in the Caribbean. To this end, increasing concerted dialogue among the stakeholders is needed.

It is clear that any effective strategy to contain the socio-economic and environmental impacts of natural disasters will have to involve preventive actions before the disaster strikes, aimed at mapping and mitigating risks to cushion the impact of the disasters; and curative actions after the disaster strikes aimed at assessing damage to mobilize resources for immediate response and eventual recovery, that will be spread across sectors and across medium and long-term horizons. Given the wide systemic effects of disasters on countries, a holistic approach towards disaster assessment is needed. Such an approach would involve multiple stakeholders in different sectors and at different levels (regional, national and community level), resting on a clear diagnosis of the resources, capacities, and competencies needed in the area of disaster assessment. There should be a clear understanding of the financing and capacity gaps that need to be filled and an awareness of the complementary roles that stakeholders need to play in order to reinforce the impact of each other's actions on the ground for optimal results. Essential

prerequisites for developing and implementing such a holistic approach may encompass the following:

- (a) Understanding the phases of a disaster assessment process;
- (b) Taking stock of the disaster assessment methodologies that have been developed by various institutions, with a view to understand their positioning in the disaster assessment phase, as well as their strengths, weaknesses and complementarities relative to each other;
- (c) Mapping the current institutions engaged at a regional level in disaster assessment and understanding their roles and responsibilities;
- (d) Identifying potential areas of collaboration among these institutions so as to ensure an optimal use of available resources and capacities by exploiting complementarities and strategic linkages;
- (e) Taking stock of ongoing tools and techniques that are being developed and the extent to which they complement each other and setting the directions for future research; and
- (f) Identifying critical gaps that need to be filled in the area of disaster assessment in terms of material and human capacities, tools, techniques and resources, in order to enhance the effectiveness of institutions engaged in disaster assessment.

In light of the number of institutions that are presently involved in disaster assessment and the existence of various methodologies and tools that are currently available to address predisaster and post-disaster phases, it can be argued that there is a pressing need to maximize the use of available resources in order to increase efficiency and effectiveness in addressing disasters in the Caribbean. To this end, this technical meeting was held in order to provide a forum where practitioners in the field of disaster assessment could converge to share information on their methodologies, and ongoing work with a view to achieving the following key objectives:

- (a) Reviewing available tools and methodologies that are currently available for addressing disasters in the subregion;
- (b) Identifying areas for making strategic linkages and applications to improve disaster assessment methodologies in the Caribbean, taking into consideration the link between disasters and development;
- (c) Strengthening analyses for risk reduction and vulnerability assessments in the Caribbean; and
- (d) Recommendations for the use of specific methodologies to support preparedness as well as monitoring and evaluation of disasters in the Caribbean.

It is expected that a regional coordinated approach to addressing disasters would be improved and, more specifically, the following outputs will be achieved:

- (a) Available tools and methodologies may be adapted and enhanced to meet the needs of the Caribbean subregion;
- (b) Strategic linkages and applications for improving disaster risk within a developmental context in the subregion would be identified with a view to enhancing collaboration;
  - (c) The analysis of risk and vulnerability would be significantly strengthened; and
- (d) The approach to addressing disasters in the subregion would be strengthened as a result of the sharing of experiences and best practices in the use of methodologies and lessons learnt

# Agenda item 1 Welcome and opening remarks

Mr. Neil Pierre, Director, ECLAC Subregional Headquarters for the Caribbean, welcomed participants and delivered opening remarks. He stated that the major objectives of the meeting were to present tools and methodologies for disaster risk reduction to promote a coordinated approach to addressing disasters in the Caribbean. It was anticipated that the sharing of such tools and methodologies would help to adapt and enhance them to meet the needs of the Caribbean, in order to allow for their optimal use in the conduct of disaster assessments in negating the reconstruction of risk as well as building resilience. More specifically, the Director expressed optimism that this meeting would result in identifying strategic linkages and applications for improving disaster risk reduction efforts within a Caribbean development context while enhancing regional collaboration. These comments were made within the context of global warming as noted by the Fourth Assessment Report of the Intergovernmental Panel on Climate Change and the linkages between climate change and disaster intensity and their potential to increase the vulnerability of Small Island Developing States (SIDS) to natural disasters. The Director reiterated the support of ECLAC for enhancing the economic, cultural, social and environmental well-being of the subregion and to collaborate with all relevant institutions to adopt a streamlined, synergistic approach to address disaster management in Caribbean SIDS.

Representing the Honorable Minister of National Security, Trinidad and Tobago, Mr. Paul Saunders, Chief Executive Officer of the Office of Disaster Preparedness and Management (ODPM) highlighted the destructive potential of natural disasters at national and sectoral levels, and the huge socio-economic losses they could impose on countries. Mr. Saunders also indicated that disaster risk reduction exercises should be informed by multi-hazard analyses that could assess individual as well as total risks. He mentioned that disaster assessment involved the gathering and analysis of information pertinent to disasters and disaster response. The assessment process extended from preparedness activities and the pre-disaster warning phase

through the emergency phase and even into the rehabilitation and recovery of the community. As the needs of the community changed through these phases, so should the objectives of the ongoing assessment as well.

He pointed out the necessity of having capacities for gathering data related to vulnerabilities and hazards in the pre-disaster phase, while emphasis should be placed on methods of collecting, producing, sharing, managing and monitoring data and information for response and recovery operations in the post-disaster phase. The data management tool should be directly linked with the damage and needs assessment process and with recovery planning objectives and methodologies.

Mr. Saunders made reference to obtaining support from ECLAC in the conduct of a vulnerability assessment of Trinidad within the context of Vision 2020. He further stated that the creation of CDERA underscored the Caribbean's commitment to creating a regional institutional framework for guiding and promoting the entire process of disaster management within the context of sustainable safety and development. He reiterated that disaster risk reduction and management were critical components of poverty reduction strategies. Attention was also drawn to the recent creation by the World Bank of a new insurance facility for the subregion whose operation would be based on principles, such as ensuring a coherent and coordinated approach towards disaster management, the implementation of disaster reduction processes and capacity building at regional and national levels, among others.

He appealed to participants, as experts in disaster management, to focus on providing a flexible, dynamic, high-level framework for use by all levels of government, service providers and other organizations to create an action plan to help develop or improve comprehensive regional preparedness. He urged the regional and national agencies involved in the area of disaster management to keep up their good work, pointing out that only through collaborative efforts would member States become better prepared to cope with disasters while commending all participants for realizing the need to participate in such an opportune forum.

Ms. Rosina Wiltshire, UNDP, Barbados and the OECS placed the meeting in four important perspectives. Firstly, to exemplify United Nations reform in action since the primary objective involved strengthening regional inter-agency collaboration in the area of disaster management and streamlining the work of various institutions. Secondly, to address disaster management as part of a development strategy aimed at achieving the Millennium Development Goals (MDGs). Thirdly, to place this meeting in the context of United Nations sustainable development frameworks and action plans, such as the 1994 Yokohama Strategy, the Hyogo Framework for Action (2005) and the Barbados Plan of Action and SIDS Conference in Mauritius (2005), that draw attention to the vulnerabilities of SIDS and the necessity to integrate disaster risk reduction into their sustainable development strategies. Finally, to acknowledge the existence of the CDM Framework and the need for all stakeholders, in particular at the community level, to take ownership of the CDM process and coordinate their actions to realize the outcomes prescribed in the CDM. She emphasized the importance of raising public awareness about disaster risk reduction in reducing vulnerabilities. She urged the meeting to identify and focus on areas of enhanced collaboration across institutions whilst building on the

CDM framework and achieving the MDGs; as well as addressing multi-hazards and the issue of governance in disaster risk reduction.

Mr. David Popo of the OECS Secretariat reminded the audience that his organization had been mandated by the authorities to develop a programme based on risk reduction and response. The OECS Secretariat was provided with the mandate of revising the "Treaty of Basseterre" that had led to its establishment, with the objective of gearing its work towards increased integration within member States, culminating in an eventual economic union. Within this new framework, to be established by 2009, disaster risk reduction would be treated as a critical area of work for the new union. Mr. Popo mentioned that in treating disaster risk reduction as a development concern, there was need to establish a programme that integrated environmental issues and disaster risk reduction as part of the overall development strategy for the subregion as well as addressing the needs of poor and vulnerable communities therein. Such a programme would have to be developed within the twin frameworks of the St. Georges Declaration of Principles for Environmental Sustainability in the OECS as well as the OECS development strategy. Mr. Popo expressed hope that the meeting would result in clear actions regarding strengthening the process of integration, and harmonizing methodologies and approaches in the area of disaster management to facilitate risk reduction so that the subregion could remain globally economically competitive.

Ms. Elizabeth Riley, of CDERA, stated that the Caribbean was rife with examples of hard lessons learnt in approaches to disaster assessment both prior to and post events. She cited the remarks made in the Kingston Declaration of 2004, stemming from a review of the regional disaster events of that year, with respect to the need for "...a higher level of regional/national/local level coordination for disaster management, with particular emphasis on damage and needs assessments." This should involve "devising protocols and mechanisms that promote compatibility between damage and needs assessments conducted by different organisations in a disaster and the damage and needs assessment conducted by the country affected".

She stressed that there was a need to fill critical existing gaps between pre-disaster and post-disaster assessments and for standardized, harmonized approaches to be sought in disaster management, especially in small nations with scarce resources where duplication of efforts imposed heavy burdens both in terms of time and funds. The results of these assessments would be used to inform development decision-making in the prioritization of specific countries where interventions would be made and at the national level in the determination of vulnerable communities where action must be prioritized. Pre-disaster assessments also had the potential role of providing critical baseline information against which progress towards reducing disaster risk could be measured.

Ms. Riley reiterated that CDERA coordinated climate change and disaster management initiatives in the subregion. She welcomed the convening of this workshop at this particular time as highly opportune, as it coincided with the Revised CDM strategy of CDERA. She set the tone regarding clear expectations from this workshop, namely for agencies present to agree on concrete steps for collaboration to allow a seamless flow from disaster risk reduction to emergency to recovery operations; for participatory approaches to be valued in conception and

implementation; for the needs for data collection and management to be addressed; for realistic, measurable, achievable and sustainable goals to be set and for the outputs of this workshop to be firmly carried forward within the revised CDM framework.

The vote of thanks to the speakers at the end of the introductory session was delivered by Ms. Asha Kambon on behalf of ECLAC.

### Agenda item 2 The vulnerability of Small Island Developing States

This context-setting session consisted of three presentations that centered on the concept of vulnerability: social, environmental and economic and its measurement through indices; its relevance for the countries of the subregion and measurement challenges.

Dr. Godfrey St. Bernard presented ongoing work on the development of a Social Vulnerability Index (SVI). The vulnerability of a system was defined as the extent to which "the strength, weaknesses and opportunities of such a system when combined are capable of overcoming the threats to which such a system and its sub-systems are exposed and hence of retarding or even arresting sustainable processes". Social vulnerability was presented as a situation where social systems and their respective parts were being threatened and the extent to which such systems were capable of withstanding these threats, recovering from such threats and even thriving in the face of such threats. SVI values for 2006 were presented for five countries, namely, Belize, Grenada, Saint Lucia, St. Kitts and Nevis and St. Vincent and the Grenadines and these were 0.473, 0.496, 0.421, 0.490 and 0.456, respectively, on a range scale from 0 to 1 with higher values representing greater vulnerability. SVI for each country were also presented per sector. An interesting implication of this research was that countries with lower poverty rates could be shown to be more socially vulnerable than countries with higher poverty rates. The research revealed severe data limitations in the subregion - ideally these SVIs should be calculated every five years, which at present was not possible. There was a need to develop more appropriate survey design and more surveys to permit data collection. In addition consideration ought to be given to the identification of other indicators namely at the governance level

Mr. Dennis Pantin, of the University of the West Indies (UWI), St. Augustine Campus, defined economic vulnerability as the susceptibility of the economic system to shocks that could impact on the economy as a whole. Using data available on natural events from an original sample of 108 countries from 1970-1996, the impact of natural events on seven macroeconomic indicators was calculated three years before and after the event. The results corroborated Professor Briguglio's evidence of direct economic vulnerability and revealed SIDS to be the most severely impacted upon in terms of three of four economic indicators for the 58 developing countries for which data were available, and the second most severely impacted upon in terms of foreign debt. Overall, SIDS were the most vulnerable among this 58 country grouping.

Mrs. Charmaine Gomes, ECLAC, presented the Environmental Vulnerability Index (EVI) developed by the South Pacific Applied Geoscience Commission (SOPAC), United

Nations Environment Programme (UNEP) and their partners, which was designed to be used with economic and social vulnerability indices to provide insights into the processes that could negatively influence the sustainable development of countries. The EVI comprised a riskexposure sub-index (REI), an intrinsic resilience sub-index (IRI) and an extrinsic resilience or environmental degradation sub-index (ERI). These sub-indices focused on ecosystem integrity and how it was threatened by anthropogenic and natural hazards. The EVI was based on 50 smart indicators for estimating the vulnerability of the environment of a country to future shocks, whereby the indicators were combined by simple averaging after their transformation to a common scale. Each indicator was classified into a range of sub-indices including the three aspects of hazards, resistance and damage and into seven policy-relevant sub-indices. Based on the values scored on the EVI scale, countries were then categorized into five groupings ranging from "extremely vulnerable" (score above 365), "highly vulnerable" (above 315) "vulnerable" (above 265), "at risk" (above 215) and "resilient" (below 215). In the Caribbean, based on EVI 2004, Saint Lucia and Barbados were "extremely vulnerable" in the same category as Singapore, while Belize was in the "at risk" category. Antigua and Barbuda was "vulnerable" while Guyana and Suriname were "resilient".

Discussions revolved around the importance, use and possibilities of integrating the economic, environmental and social vulnerability indices. While the usefulness of these indices was clear, it was less clear as to how these indices should be jointly utilized to inform each other, as to how to create synergies across them, and as to whether it was desirable or even necessary to integrate them into a single overarching index.

Regarding the social vulnerability index, it was stated that it was necessary to integrate the human element by incorporating considerations of parameters such as the Millennium Development Goals. Social inequality must also be addressed by incorporating race, class and gender dimensions as well as incorporating the community dimension to help locate the vulnerabilities. The Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) was missing in the index and this was considered a serious shortcoming given its increasing threat to the Caribbean. Further, it was stated that since vulnerability encompassed more than poverty, and should point to the susceptibility and resilience of a country, dynamic measures were thus needed. The point was also made regarding advocating the development of a 'bottoms-up' approach to assessing social vulnerability and using the household as the unit of analysis as opposed to the nation. It was acknowledged, however, that severe household data limitations existed that could limit the empirical application of this approach.

Referring to the environmental vulnerability index it was suggested that size of the land mass and data limitations were possibly responsible for the classification of Guyana as "resilient" to natural disasters on the index, which begged the question of whether these indicators were applicable to the subregion or whether they needed to be adapted.

Adding a time component to these indices was also considered, notably the need to track changes over time and the possible use of census data for that purpose. It was pointed out that these indices must be tailored to allow for an identification of the groups that were most vulnerable and the ones that were most resilient in order to inform policy. For all three indices, concerns were raised over data availability and data accuracy to allow good measurements.

Measures of resilience, it was said, should also be explored to complement measures of vulnerability.

While keeping the three indices separate was deemed by some as legitimate given that they were designed to address separate issues, the question posed was how to make these indices come alive in a national and a regional context taking into account human elements to address the concerns of SIDS. Views were expressed that the integration of these indices would be difficult, but it was felt that the focus should not be on quantifying vulnerabilities alone (generating numbers on an index on their own might not be useful) but rather the focus should be on risk assessment and management of vulnerabilities. The question was how to use information contained in these three indices to build adaptation to and capabilities to respond to natural disasters, for instance, risk assessment and managing disaster risk could be strengthened by utilizing hazard maps that incorporated information from the environmental, economic and social vulnerability indices.

# Agenda item 3 Methodologies for risk reduction at the community level

This session examined the pre- and post-disaster phases of disaster management at the community level, focusing on the merits of risk reduction and challenges in building institutional and human resource capacity. The objective was to share experiences to allow for cross-fertilization of ideas in the use of methodologies with a focus on lessons learnt.

The Vulnerability and Capacity Assessment (VCA) methodology developed by the Caribbean Community Climate Change Centre (CCCCC), the National Oceanic and Atmospheric Administration (NOAA) and UNDP was presented along with the Rapid Environment Assessment (REA) methodology developed by the OECS secretariat. It is to be noted that the OECS secretariat had also facilitated other tools such as a disaster risk management benchmarking tool to reduce vulnerability to natural disasters and create greater economic resilience, and had implemented the Management of Slope Stabilization in Communities (MoSSaiC) project to improve slope stability through low cost technology. The use of the Sustainable Livelihoods Approach (SLA) in disaster assessment methodologies was presented by ECLAC.

The need for strong baseline data in the conduct of assessments to allow pre and post comparisons was highlighted as well as the need to involve communities in the process. Communities, as the repositories of data, needed to be educated as to why data were being solicited from them and the purposes to be served by the data collection process. If communities understood how such data would inform the response and recovery processes and how therefore it would directly impinge on their future welfare, they were more likely to be willing to participate fully in the data collection exercise. The data collection burden could be alleviated by integrating assessment programmes into ongoing and existing national practices, for instance, designing national census exercises to address the data needs of disaster assessment methodologies. Environmental data for coastal assessments were also needed. National census data should also be complemented with household data in conducting disaster assessments. It

was important as part of disaster preparedness and disaster response to understand the environment households lived in, the type of assets they owned so as to facilitate the design of appropriate measures pre- and post-disaster. A good understanding of the constraining and enabling factors faced by communities in building up their resilience was warranted and this information could be provided by household data and other sources such as the United Nations Children's Fund Multiple Indicator Cluster Surveys (UNICEF MICS) and Food and Agriculture Organization of the United Nations (FAO) food security surveys. Disaster assessment officials hence needed to be aware of the multiple sources of data available that could assist in their quantitative field work. Moreover a risk mapping of communities may be undertaken to complement census and household data. The Country Assistance Plan (CAP) surveys advocated by the VCA methodology can be useful here.

The usefulness of Geographic Information Systems (GIS) was mentioned and the question was asked as to whether there were any GIS mapping initiatives of vulnerable communities that could be used to complement census data in the subregion. It was mentioned that Barbados had developed a GIS database but the actual use of this information was unclear; in addition UNDP (Trinidad and Tobago) had attempted to pursue a GIS mapping project but it was discontinued because of the political sensitivity of the information gathered, despite the fact that the GIS could have been a very valuable tool. Mexico had developed a risk atlas that used GIS imagery to look at the multi-hazards facing a location. Vulnerability indices were then imposed on it in order to arrive at risk formulas. It was suggested that the information could be used to complement teaching programmes aimed at defining hazard maps at the community level and enhancing community/public awareness.

The key role of the church at the community level in the emergency response stage was highlighted and the contributions of the Caribbean Conference of Churches (CCC) in this regard after Hurricane Gilbert in 1996 were detailed. The CCC had instituted an effective relief system providing shelter clinics and specific repairs to the infrastructure to reduce the incidence of future destruction. Informal builders were sensitized on roof strengthening for instance. It was noted that Non-Governmental Organizations (NGOs) provided a key vehicle through which data could be compiled from communities, especially in the pre-disaster phase because of their intimate community involvement and trust enjoyed among communities, as well as being suppliers of information themselves.

Empowerment and education of communities could contribute to the effectiveness of disaster preparedness. Public awareness programmes could educate communities on appropriate pre- and post-disaster practices to reduce their vulnerabilities to disasters e.g. educating communities about the dangers of cutting mangroves that could be a natural protector in floods. 'Bottoms-up' approaches in disaster risk reduction needed to be envisaged. For instance, communities should be involved in hazard mapping and risk mitigation exercises.

There was a need to analyze how communities could build their asset base and use their existing assets to reconstruct their livelihoods after a disaster. Micro-savings, micro-finance and micro-insurance programmes could be implemented to assist these communities in building up on such assets for economic sustenance.

### Agenda item 4 Methodologies for disaster impact assessment

The focus of this session was on existing methodologies for the conduct of disaster assessments at a national level.

These methodologies were best viewed along a continuum of interventions sequenced across time starting with the United States Agency for International Development Disaster Assessment Needs Analysis (USAID DANA) in immediate disaster times focusing on emergency and response, to the ECLAC Damage and Loss Assessment (DALA) over the medium term focusing on recovery and informing long-term rehabilitation. The Post Disaster Damage and Needs Assessment (PDNA) methodology that aimed to offer a holistic, comprehensive approach to disaster management, with particular emphasis on bridging the gap between emergency response and long-term rehabilitation was discussed. The integration of gender in disaster assessment methodologies was presented by ECLAC.

During the presentations, the methodologies were characterized as complementary in use, and satisfaction was expressed in their treatment as a continuum along the various stages of the disaster management process. However, there was a query on how to facilitate a seamless flow in operations and interventions from emergency to response to recovery stages and the extent to which structures were established to allow the seamless flow. ECLAC was asked as to whether follow-up to its assessment was done after five to six years after the disaster in order to evaluate its original findings and gauge cumulative impact (e.g. in case of multiple disasters occurring year after year) to which ECLAC replied in the negative. While no real follow-up was done after five years, it should be noted however that in its initial assessment, ECLAC had projected into the future for up to five years and therefore long-term effects were incorporated. ECLAC clarified that its calculation of "indirect" losses covered the time period it took for the relevant sector to rebuild and be operative again (e.g. for tourism, for visitors to come back) and that time period varied by sector. Efforts were under way with the Inter-American Development Bank (IDB) to assess dynamic effects of disasters through case studies for specific countries. It was recommended to use socio-economic assessments in conjunction with physical assessments to gauge the impact of disasters.

Regarding gender assessment, it was felt that the comparisons should also extend between the Caribbean and other regions, for instance, whether women's behavioral responses after a disaster in the Caribbean were any different from that of their counterparts elsewhere. In addition, women should not be treated as a homogenous group and differences among various economic groups of women, for instance, should be considered. In reply, it was stated that, among others, women in the Caribbean tended to go back to work right after the disaster, in what was perhaps a coping mechanism. On another note, it was pointed out that the Initial Damage Assessment (IDA) of DANA should integrate gender considerations.

Concerns were expressed on the impact of disasters on productivity and comparative advantage patterns as well as savings functions of countries. It was pointed out that while, on the one hand, disasters led to immediate losses of stock of capital goods that could hinder productivity in the medium term, on the other hand, it gave firms an opportunity to modernize

their equipment and invest in higher productivity technology, thus in the long term productivity could actually increase. The caveat, however, was that the latter depended on whether countries had sufficient resources to completely rebuild and replace destroyed infrastructure, which was seldom the case, therefore the overall effect on productivity was more likely to be negative.

Some participants requested clarification on the extent to which these methodologies could actually facilitate future risk reduction. The role of social capital in speeding up the recovery process and ensuring assistance and relief in the immediate term was confirmed. Social capital also extended to the Diaspora whose remittances after a disaster constituted important sources of assistance funds to communities. Getting credit from the "Sou Sou" system to launch economic activity after the disaster was an option for those households with no private savings. The relevance of establishing a Regional Coordinating Mechanism (RCM) to facilitate coordination and collaboration across tools and methodologies of various organizations was put forward for consideration.

# Agenda item 5 Ongoing initiatives in disaster risk reduction

During this session, ongoing initiatives in disaster risk reduction were featured and an update on the nature, progress and relevance of these activities to strengthening resilience in the Caribbean was given.

UNDP presented its ongoing work on the preparation of a Caribbean Reducing Disaster Risk (RDR) Report as part of the Caribbean Risk Management Initiative (CRMI). The Disaster Risk Management Benchmarking Tool (DRBT/Btool) developed by the OECS secretariat was presented, and a representative of the CCCCC gave an overview of the various activities conducted on climate change adaptation planning in the subregion.

The discussions revealed that although there were ongoing initiatives in disaster risk reduction in the Caribbean, these were mainly on a project-by-project basis. The CCCCC, for example, operated on funding from two sources primarily from Belize and the Government of Barbados. It mainly operated through projects where funding must be secured to facilitate implementation. This project, however, required further analysis – even going beyond expert analysis – to improve on its conception. It was stated that capacity development at the regional level was essential to address the impact of disasters, to support this institution.

It was suggested that funding was a big constraint to knowledge transfer in the Caribbean thereby limiting the expansion of some programmes throughout the subregion.

In response to a question on the measurable impact of the CCCCC since its creation, the following information was provided:

- Funding Masters students at UWI...
- Implementation of the Small Pelagic and Climate Change (SPACC), a project implemented on a pilot basis in Saint Lucia, St. Vincent and the Grenadines and

Dominica. The conception model was developed to guide implementation in these pilot countries and it needed to be extended to others.

- Knowledge transfer to the subregion would take place through Memorandum of Understanding (MOU) signed with the Institute of Meteorology (INSMET), Cuba and NOAA. These institutions will provide technical support to other Caribbean countries.
- Development of a constituency that deals with climate change matters in the subregion (technical, scientific and political).
- Development of a database.
- Clear definition of roles for member States in adaptation to climate change process.
- Regarding the VCA methodology, a policy paper was developed and presented at a Council for Trade and Economic Development (COTED) meeting and its recommendations would be integrated at a country level through national programmes and plans for its implementation.

The need to design a framework that specifically dealt with disaster management from an MDG perspective was highlighted. Professor Jeffrey Sachs' remarks during discussions among member countries and the Millennium Development Goals panel in New York were cited with respect to designing a framework at a global level with regional components involving the private sector (development banks, insurance companies, private banks) to address risks in a development context in order to achieve the Millennium Development Goals. Studies on how disasters impacted the achievement of development goals, especially the Millennium Development Goals, and on how strategies that integrated disaster risk reduction facilitated their achievement were needed.

It was clear that there were a number of ongoing initiatives in the subregion, some of which had similar and/or complementary objectives. The need to rationalise these initiatives was mentioned. In addition, the setting up of a monitoring framework as part of CDERA's CDM was noted which could be used to analyze how the outputs and outcomes of these ongoing initiatives were supporting and contributing to the overall goals expressed in the CDM.

# Agenda item 6 Optimizing the use of existing methodologies for addressing disasters

The Chair stated that there was a lack of information and knowledge sharing among parties involved in disaster management which severely limited cross-collaboration and the creation of synergies and exploitation of complementarities across methodologies and tools used; synergies and complementarities that could be useful for their optimal uses and applications. It was stated that by benefiting from each other's capacities, experiences and knowledge, all parties could optimise the use of their respective methodologies for the purposes of greater effectiveness

and better informing of policy-making. Failure to coordinate actions on the ground and perceptions of a lack of collaboration among disaster management actors might create a "disaster" of its own in the media and significantly damage the image and credibility of organizations involved in disaster management.

The presentations and discussions of the last two days were then recapped in order to highlight the important messages that emanated from them. The major recommendations and points that emanated from this session's discussions are summarized below:

The tools and methodologies should be used to promote the collection of data and highlight data deficiencies, in order to strengthen the analytical base for risk-related assessments, enrich research components and facilitate the implementation process. In addition the ability to share and transfer data and information across board among all actors involved in disaster management was emphasized. There was a need for a common data platform to allow one organization, for example, to access data collected by others during the conduct of their assessments, for use in its own assessment. Information transfer should be encouraged within and among the methodologies. It was recognized that one methodology on its own could not address all aspects of a disaster; they had to be used in conjunction with one another, thereby rendering data sharing among them essential. Given that each methodology had its own set of data requirements, and that each organization collected data for its own assessment independently from the others, as a result, significant strain was imposed on communities and national authorities that had to supply the data during the disaster assessment process. Duplication of data collection strained limited national resources and undermined the data collection process itself as data suppliers got fatigued and lost interest. A strategic approach to data management was therefore needed that would require collaboration across all agencies. The creation of a data portal on disaster management to be housed by either CDERA or ECLAC was suggested as a means to promote pooling of information and its wide dissemination.

Using disaster assessment results to inform upon policy was important. While there might be a plethora of assessment methodologies and disaster management tools, it should be borne in mind that policy makers and government personnel might not necessarily be capable of using the end results, and data generated from them in order to formulate appropriate policies. Thus policy makers and government officials might need to be trained in how to use data and findings from the disaster management process to inform policy.

Policy reform, good institutional structures, and harmonization were needed to optimize usefulness of methodologies. Assessment methodologies should be used to provide a platform for the development of appropriate policy at the national and regional levels and guide policy reform in making disaster management effective. Without effective policies and strong and capable institutions, the benefits of using these methodologies could be severely compromised. Harmonization should be sought in the conduct of methodologies. It was decried that there was not enough collaboration and coordination among agencies to focus their activities within a common results framework and ensure continuity in actions between the pre- and post-disaster stages. Guidelines needed to be established to guide the execution and implementation of these methodologies and tools. Entry points needed to be identified to link them together, e.g. how to

apply the Btool in the DANA methodology. In addition, the national institutional structures must be able to support the optimal execution and use of these methodologies.

Integrating disaster risk reduction and Btool in national frameworks was needed. The meeting was informed that the integration of the REA in disaster management plans had been initiated in the OECS through one of the principles under the St. George's Declaration of Principles for Environmental Sustainability. National environmental strategies would be formulated to integrate disaster risk reduction into environmental management with linkages to sectors. Indigenous policies would be aligned with existing methodologies. There were efforts under way to institutionalize the Btool in the OECS, which will necessitate vertical and horizontal approaches in capacity building. A green paper was being prepared to be presented to Cabinet with respect to increasing public awareness of the benefits of disaster risk reduction at the ministerial and technical level. Additionally, promotional work was being conducted with cabinet and technocrats to identify a focal point minister in each country to liaise with finance and planning departments to champion the use of the Btool.

Governance and political support were critical elements in optimizing use of methodologies and tools. It was pointed out that the optimal use of these methodologies through their harmonization would necessitate a strengthening of governance structures at administrative and institutional levels as well as at the political level. Political support at the highest level was essential and should be garnered through awareness creation and consensus building.

It was noted that a Disaster Risk Reduction Center at UWI had recently been created which would be instituting short-term programmes for disaster management personnel in the future. Efforts should be directed at educating all university students on the concept of "risk and disaster awareness" through, compulsory foundation courses at the undergraduate level so that students could apply this concept and look for creative solutions in their own fields. Mention was made of the recent meeting of the world consortium of SIDS universities (consisting of the University of Fiji, the University of South Pacific, University of Virgin Islands, University of Malta and UWI) in the Hague where disaster reduction and mitigation issues were discussed. Accreditation is being finalized for courses to be offered on those subjects at both the undergraduate and post graduate levels by the consortium. Moreover, the implementation of an open university at UWI on the topic of disaster management was being targeted for 1 August 2007. This mode of learning, targeting off campus students and citizens within the subregion, would surely be an important channel in educating a wider audience on disaster preparedness. It was pointed out that that the UWI Distance Education Center was present in 16 Caribbean countries and these centers could be used to promote education on disaster risk reduction. UWI (Mona and Cave Hill) had engaged in regional collaboration with INSMET in instituting a Climate Modelling Center for the subregion.

The need for mapping and evaluating existing tools and reviewing their strengths, weaknesses and gaps was expressed. A methodology menu was suggested to identify what tool should be used throughout the disaster preparedness continuum.

Participants queried whether all assessments should be carried out and who would bear the cost. The Chair stated that each and every assessment was utilized for a different purpose.

While these assessments were not in competition with one another, they were to be viewed as complementary and the focus was on strengthening their complementarities.

Caribbean countries might need to change the way they approached donors. It was noted that pledges made by donors in the wake of disasters to aid in relief and reconstruction did not always come through. Resources from external players in disaster management were in fact running out. In addition, donor organizations were becoming increasingly less geared towards funding disaster relief programmes and more geared towards assisting countries that instituted disaster mitigation and risk reduction measures. Consequently, the Caribbean might need a new approach to dealing with the donor community. Countries needed to shift from merely reacting to a disaster towards pre-emptively preparing for one. Their focus should be on disaster Countries needed to come up with a budgeted action plan that would list mitigation actions prior to a disaster and assess relief and recovery needs after a disaster, along with the resources needed and the resource gap. The action plan would then serve as an instrument for mobilizing resources from the donor community. However, it was acknowledged that changing the culture from disaster response to disaster mitigation would be challenging. The scores and rankings of countries on tools and indicators such as the Btool and vulnerability indices might be used to sensitize politicians on weaknesses and gaps in disaster preparedness plans and stimulate action at a political level in terms of coming up with a well defined action plan.

Training the media in disaster management practices and carving a role for the media to educate the citizenry on reducing disaster risks, preparing and reacting to a disaster might be relevant. The role of the church in public awareness and education campaigns was also highlighted in this context given its unique stand in communities and support constituencies therein. It was noted that the United Nations had developed pedagogical materials on media training in disasters that could be used.

An evaluation of the assessment methodologies using scientific methods might be warranted. These assessment methodologies were not static but dynamic instruments. Their scope, contents, own methodology and uses might be made to change over time to enhance their relevance and, as such, they should be subject to evaluations.

Building capacities and ownership of methodologies and tools was important. It was also mentioned that national capacities in using the methodologies and tools needed to be strengthened, and here UWI had a special role to play. National ownership of these methodologies and tools by national institutions and communities also needed to be built.

Cross-fertilization of methodologies should be looked into. The point was made that a cross-fertilization of methodologies might be desirable as a means of transferring best practices and building on each other's strengths. A starting point would be the extension of in-house training on methodologies and tools to officials of other organizations.

CDERA proposed a draft plan of action in charting the course forward for disaster management in the subregion. It was suggested that such a plan of action should be at three levels in the immediate term:

- Technical assessing comprehensively the methodologies; addressing the weaknesses and enhancement of these tools; packaging and analysing the tools.
- Human element focusing on strengthening capacity at the national level; what were the challenges of this and how could these be addressed?
- Institutional arrangement strengthening coordination.

### Agenda item 7 Innovative financing mechanisms for risk reduction

The Chair observed that there was a current lack of regional insurance coverage for disasters and thus there was a lot of scope to establish risk transfer and contingent funding arrangements within the subregion. Some of the main players in the financing arena were present and led the panel in addressing existing and possible innovative mechanisms that could complement an overall risk reduction plan for the subregion.

The IDB was in the process of drafting a new Disaster Risk Management Policy that was developed in light of the increasing number and seriousness of disasters in Latin America and the Caribbean, and the fact that these impacted negatively on the economic and social development of most countries. This policy was meant to improve upon the institutional and policy framework of the Bank to support disaster risk management in order to help protect the socio-economic development of borrowing member countries and improve the effectiveness of the Bank's assistance. This new policy emphasized risk reduction, rewarded governments committed to a proactive sustained approach to disaster management, emphasized actions at the pre-disaster rather than post-disaster stage and aimed to make disaster risk prevention an integral part of governance. The Bank recognized that a proactive stance to reducing the number of casualties in a disaster required a comprehensive approach, with an emphasis on actions taken before the disaster rather than on post-disaster recovery.

This new approach would involve the following: risk analysis to identify the types and magnitude of potential impacts faced by member countries that affected development investments; prevention and mitigation measures to address the structural and non-structural sources of vulnerability; financial protection and risk transfer to spread financial risks over time and among different actors; emergency preparedness and response to enhance a country's readiness to cope quickly and effectively with an emergency; and post-disaster rehabilitation and reconstruction to support effective recovery, and to safeguard against future disasters. The new policy would emphasize the building of adequate institutional capacities and civil society participation in its activities. The Bank would focus its support to countries in identifying and managing risks related to natural hazards. In its project lending operations, the Bank might refuse lending if risks were perceived to be too high or could not be mitigated. In its post-disaster

operations, a significant share of the funding would go towards reducing vulnerabilities towards future disasters and improving capacities for disaster risk management.

As a national insurance company in Trinidad and Tobago, the American Life and General Insurance Company (ALGICO) had its own methodology for assessing risks and maintained its financial viability by resorting to reinsurance. The company did an analysis of risk exposure during which the country was divided into zones, and the areas likelier to sustain heavier damage in case of a disaster were identified. Risks were located by using software developed by Munich Re that mapped risks around the world. Through the use of catastrophe loss modelling, the cost of repair and replacement of damaged property was estimated allowing the company to assess its exposures to losses by zone. Trinidad and Tobago, for example, was close to a seismic fault and possible losses linked to an earthquake of 6-7 on the Richter scale could be estimated and the vulnerable areas identified. Expected maximum losses were calculated to allow the company to estimate its needed reserves (which needed to be adjusted for inflation) to compensate its clients for socio-economic losses and costs of dislocation. In the aftermath of a disaster, the company appointed assessors to assess the damage on an individual basis within 24 hours and start the recovery process. The insurance community viewed itself as an important partner to the government in absorbing the economic shocks associated with disasters.

It should be borne in mind that insurance companies could be subjected to dislocations in case of a disaster and, as such, they needed their own contingency plans and needed to maintain "hot sites" to allow them to get their operational systems back and running so as to remain fully functional in case of rupture in their normal operations. Insurance companies supplied services of "risk transfer" by bearing the full costs of a disaster for its clients up to the insurable limits. It was noted that ALGICO supported national efforts at risk mitigation (such as better urban planning and safe building practices). Mention was made that insurance companies needed to ensure adequate pricing and adjusting of its risk premiums on a regular basis to avoid undercapitalisation of its funds and eventual bankruptcy.

It was stated that even though countries might engage in comprehensive disaster risk reduction and risk mitigation through structured and non-structured programmes and physical mitigation measures, nevertheless disasters would always impact negatively and the subregion's ability to recover fully on its own would always be limited. There were components of risks that were simply uninsurable and unavoidable.

The World Bank's recently created Caribbean Catastrophe Risk Insurance Facility (CCRIF) was highlighted as the sole regional disaster insurance facility. Through this pooled insurance facility, participating countries could obtain immediate liquidity up to a maximum payout of \$50 million in case of a hurricane or earthquake in return for payment of annual premiums. Views were expressed, however, that this Fund was still a "traditional" response (expost) financing mechanism rather than an (ex-ante) disaster management and mitigation mechanism and, as such, could not be classified as an "innovative" mechanism.

The Central Emergency Relief Fund in Barbados was the sole known catastrophe fund in the subregion. It was noted that Barbados has had its own catastrophe fund for more than 20 years, from which funds were drawn to compensate households in the lower income brackets in case of disasters. However, unused funds had not been invested in interest bearing accounts nor had the fund been replenished regularly.

Catastrophe funds were still an ex-post funding mechanism. What was needed were funds to be available before a disaster struck. It was felt that disaster preparedness and mitigation would necessitate large sums to be made available to countries before a disaster and, yet, most financing mechanisms, such as the Catastrophe Fund, provided funds only after the disaster, targeting mostly emergency and relief rather than long-term recovery. The absence of risk reduction financing mechanisms was justified partially on the grounds of insufficient data to assign probabilities to risks and losses or difficulties to calculate losses based on specific scenarios. Enquiries were made as to the possible uses of the IDB Disaster Deficit Index in quantifying risks for the Caribbean. Clarifications were given that the Index relied on a complex conceptual framework and sound statistics that were simply not available in the subregion.

Owing to limited resources available for post-disaster response and recovery, there was a need for innovative and strategic resource mobilization for disaster risk reduction. Difficulties of estimating disaster losses in the pre-disaster stage made the transfer of risks difficult and resulted instead on a reliance of Caribbean governments on the donor community to finance relief and recovery in the post-disaster stage. However donor aid fatigue and the associated limited resources available for post-disaster activities implied that the Caribbean needed to embark on innovative and strategic resource mobilization focused on disaster risk reduction activities. The Enhanced CDM, it was explained, embraced this approach by emphasizing the need to shift from bilateral to regional financing arrangements. As part of the Enhanced CDM, donor funds would be deposited into regional programme structures that would contain several entry points for disaster stakeholders to realise specific outcomes.

Micro-level incentives should be designed and implemented as part of disaster risk reduction measures. Mention was made of the role of the private sector and government in encouraging households to engage in risk reduction by tailoring incentives accordingly, for instance, private banks dispensing incentives to clients to reduce risks when applying for mortgages; insurance companies giving premium concessions on houses built in accordance with building codes; or governments giving tax breaks for households engaging in risk mitigation.

It was appreciated that insurance was a profit-motivated business and, as such, these organizations could not and would not provide coverage for every disaster scenario, or for areas where the risks were so high thereby making insuring non-profitable. There was, therefore, a need to develop financing mechanisms for social programmes that would address the needs of vulnerable communities.

It was noted that innovative financing mechanisms for disaster risk reduction existed, (catastrophe bonds, catastrophe swaps, catastrophe equities, catastrophe puts, catastrophe exchange trades and catastrophe options). These combined insurance proprieties with private capital market instrument characteristics.

### Agenda item 8 Regional collaboration for disaster risk reduction

The session focused on a presentation of existing tools and methodologies within the Caribbean whose optimal use was to be facilitated through regional collaboration.

The enhanced CDM framework developed by CDERA was presented. This new and revised framework became effective from 2007 until 2012 and followed on the previous CDM (2001-2006). This enhanced framework is meant to address the gaps identified in the review of the first CDM as well as those identified in the Kingston Declaration 2005 and incorporated considerations derived from stakeholder consultations, and a variety of other studies. While continuity with the previous CDM existed in terms of intermediate results, the enhanced CDM nevertheless was more rigorously couched in a programme-based and results-based management approach that could act as a catalyst for donor harmonisation and move towards an overarching CDM regional programme. Linkages with regional programming frameworks (e.g. CARICOM) and international strategies and frameworks were assured. The enhanced CDM was based on a clear definition of realistic results and programme beneficiaries, ensured that outcomes were well supported by outputs, and emphasized monitoring towards expected results with key tools and indicators as well as lesson learning and results reporting.

With regard to regional collaboration, the sharing and transfer of knowledge; sharing of scientific findings; lessons learned and best practices and the enhancement of regional governance structures were important avenues to be explored for areas of collaboration in conformity with the stipulations of the Hyogo Framework of Action. In addition, the division of roles, responsibilities and competencies of the various institutional actors needed to be clear for collaboration to be effective. Examples of ongoing efforts in regional scientific collaboration concerned adverse weather forecasting, climate change modelling and adaptation to climate change activities involving the CCCCC, UWI, Barbados and Jamaica, INSMET and the Caribbean Institute for Meteorology and Hydrology (CIMH); and the establishment of an RCM in the Caribbean for the implementation of the SIDS Plan of Action/Mauritius Strategy Implementation.

Participants noted the issue of limited capacity for disaster risk management at the national level. It was felt that institutional capacities would need to be beefed up as part of the implementation of the enhanced CDM. The representative from CDERA pointed out that some countries possessed more national capacity than others; that upgrading the capacities of regional organizations was inevitably tied to funding and ultimately donor funding through projects. There were many areas where capacities needed to be built, starting with monitoring and reporting and the acquiring of negotiation, lobbying and advocacy skills particularly by national disaster officers.

It was pointed out by one participant that the Caribbean was thought to have a higher number of regional organizations than the whole of Africa, which put in perspective the challenges for regional collaboration. However given that man-made disasters could create spillover effects within a large radius, and that disasters were boundaries-blind, it was motioned that regional collaboration should not be confined only to countries within the Caribbean Basin and that there was a need to think 'outside the Basin' as well. It was also observed that there seemed to be a genuine mobilization towards coordination between the United Nations agencies and the regional agencies and that this would facilitate the integration of the Caribbean initiatives. It was stated that possibly the Association of Caribbean States (ACS) was a good forum for cross pollination of ideas between CDERA and the other agencies. However it was cautioned that regional collaborative efforts should take into account the vast diversity of the subregion and properly account for national specificities.

The question was raised as to how regional collaboration would provide added-value to the activities at the national level. It was postulated that in terms of capacity building, for instance, it would be more cost effective for regional entities to collaborate to supplement national efforts in areas beyond the scope of the countries. One suggestion was for specific areas in disaster management to be identified as avenues of potential regional collaboration and for the agenda to be subsequently broadened. As an initial step, collaborative efforts could focus on harmonizing disaster assessment tools and methodologies to then expand in other areas such as climate change and financing mechanisms.

The representative of the Caribbean Meteorological Organization (CMO) stated that there were no boundaries with respect to weather and, as such, there was an effective information-sharing system practiced within this community in the form of early warning systems. This point was well appreciated by the group. It was suggested that this practice should be emulated in the disaster management arena, backed by scientific evidence and inclusive of a much improved recording system.

It was pointed out that disaster risk reduction tended to focus on big disasters, however disasters could be on a different scale and affect various sectors differently. While a disaster might not have a significant impact at a national level, it could however have a greater impact at a particular sectoral level. In terms of modelling disaster occurrences, as part of the disaster management process, it was important to provide information to sectoral policy makers in a user-friendly format to allow them to establish thresholds above which actions would be triggered.

#### Agenda item 9 Simulation exercise

In this session participants were provided with a hypothetical disaster scenario for a fictitious Caribbean country and then asked to describe the roles that their particular organization could play to provide support, first, in the imminent term, second, as part of future long-term disaster preparedness and, third, as part of rehabilitation.

# Agenda item 10 Wrap-up, reflection and charting the way forward

The main reflections follow:

- (a) There was willingness on the part of regional disaster management organizations, institutions and agencies to share information and collaborate.
- (b) It was possible for the actors to collectively pursue common interests from different angles and under different mandates.
- (c) There were some pressing issues that could not be dealt with individually by each agency, organization or institution, which merited collaborative efforts, namely in the area of collecting data and improving data quality; raising public awareness to minimize the likelihood that a natural event would result in a disaster; and building political support and creating political ownership of the disaster management process.
- (d) Thus there was an important need for the multiple actors to better understand each other's work, methodology and tools and, in essence, to learn to better communicate with each other.
- (e) A pooling of knowledge and a pooling of efforts in public awareness and political lobbying was needed.
- (f) However collaborative efforts should be firmly anchored within the enhanced CDM.

#### The Way Forward

The draft action plan proposed by CDERA in Session 5 (agenda item 6) was endorsed.

Table 1: Components of Draft Action Plan

Technical	Human	Governance/ Institutional Arrangements
Assessment of methodologies	Building capacity	
<ol> <li>Strengths and weaknesses</li> <li>Analysis of information</li> <li>Role Definitions</li> <li>Use of results to inform policy</li> <li>Data collection and management</li> <li>Real time monitoring and evaluation</li> <li>Sharing evaluation of assessment methodologies</li> <li>Coordination of methodologies</li> </ol>	<ol> <li>Capacity building at national level</li> <li>Sharing schedules of training among agencies</li> <li>Capacity building at other levels</li> <li>Training components</li> </ol>	

#### **Immediate Tasks**

- (a) It was agreed that a Core Group will be set up to take the collaboration process further. ECLAC will draft Terms of Reference for the group to conduct a review of the disaster assessment methodologies. The group's functions will include facilitating technical reviews and identifying opportunities for joint training across institutions.
- (b) As a member of the Core Group, UWI will be given the task of mapping the various methodologies, tools and actors in the disaster management continuum, along with a clear description of the division of roles and responsibilities.
  - (c) ECLAC will convene a meeting of the Core Group in June.
- (d) A website should be created for the subregion in which a section would be devoted to disasters. The available tools and methodologies for addressing disasters would be posted on this website as well as the list of meeting participants and their contact information.

#### Annex

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