

Training workshop on the ECLAC methodology  
for assessing the macroeconomic, social and  
environmental impacts of natural disasters  
Port-of-Spain, Trinidad and Tobago  
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**REPORT OF THE TRAINING WORKSHOP ON THE  
ECLAC METHODOLOGY FOR ASSESSING THE MACROECONOMIC,  
SOCIAL AND ENVIRONMENTAL IMPACTS  
OF NATURAL DISASTERS**

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# **REPORT OF THE TRAINING WORKSHOP ON THE ECLAC METHODOLOGY FOR ASSESSING THE MACROECONOMIC, SOCIAL AND ENVIRONMENTAL IMPACTS OF NATURAL DISASTERS**

The workshop was held at the office of the Economic Commission for Latin America and the Caribbean/Caribbean Development and Cooperation Committee (ECLAC/CDCC) secretariat, Port of Spain, Trinidad and Tobago, 10-12 July 2000.

## **Attendance**

Representatives of the following CDCC member countries attended the meeting: Anguilla, Antigua and Barbuda, Barbados, Grenada, Jamaica, Montserrat, Netherlands Antilles, St. Kitts and Nevis, Saint Lucia and Trinidad and Tobago. The following organizations were represented at the meeting: Caribbean Disaster Emergency Response Agency (CDERA) and the Food and Agriculture Organization of the United Nations (FAO). A list of participants is attached as an Annex to the present report.

## **Opening**

The Director of the ECLAC/CDCC secretariat, Dr. Len Ishmael, welcomed participants to the meeting and stated that the workshop was geared to providing the skills and the methodology to undertaking macroeconomic assessments of damages in the immediate aftermath of natural disasters.

She informed that the objectives of the workshop were:

- To build capacity at the national level to permit the undertaking of the required economic, social and environmental assessments and compute these in terms of impacts on macro-economic performance, in the immediate aftermath of any given natural disaster, using the ECLAC methodology;
- To establish a core of persons with multidisciplinary skills across the Caribbean who can form the nucleus of a regional team whose assistance might be enlisted by ECLAC for undertaking assessments in different countries of the region. Emphasis was placed on the provision of systematic training in the application of the ECLAC methodology to evaluate damages sustained as a result of natural disasters to the social services, infrastructure, coastal resources and environmental resources, as well as to the productive sectors of regional economies.

The Director stated that the utility of the ECLAC methodology lay fundamentally in assisting countries to understand the short, medium and long-term impacts of natural disasters on macroeconomic, social and environmental performance and the well-being of their populations. ECLAC had provided post-disaster assistance for 28 years to several countries of the Latin American and Caribbean region using the methodology to conduct macroeconomic assessments of damages occasioned by natural disasters, primarily on the economic performance over the short, medium and long term. The Director stated that the ECLAC methodology was unique since it assessed the sum total of all damages on the overall macroeconomic performance of the country, while other groups were involved in the quantification of damages so as to deal with emergency responses. The methodology would be expanded to include a fuller treatment of the social and environmental impacts.

### **Agenda**

The workshop was based on a number of topics germane to the methodology. The agenda was as follows:

1. Special aspects of disasters in the context of small island States in the Caribbean
2. Methodological and conceptual aspects of assessment
3. Sector evaluation
4. Infrastructure
5. Economic (productive) sectors
6. Information systems
7. Effects of damages
8. Institutional capacity
9. Definition of the reconstruction strategy
10. Closing remarks by the presenters of the methodology
11. Feedback, critique and comments on the ECLAC methodology
12. Disaster assessment experiences
13. Policy implications
14. Follow-up.

### **Special aspects of disasters in the context of small island States in the Caribbean**

The first session addressed "Special Aspects of Disaster in the Context of Small Island States in the Caribbean". In this session, presenters briefly identified some of the most critical effects or issues to be considered in the wake of natural disasters.

Dr. Leonard Nurse, ECLAC/CDCC Consultant, focused primarily on the effects of natural disasters on coastal and marine processes. He observed that natural disaster agencies in the Caribbean had not paid sufficient attention to water level changes caused by phenomena, such as storm surges, and pointed to the serious damage caused by the rise in water levels even when disasters had not directly hit countries in the region. He also illustrated the extent to which inattention to the importance of natural barriers during the construction of edifices could lead to costly damages. Mr. Nurse then looked at the engineering and non-engineering options in post-disaster mitigation efforts, emphasizing that the damage caused by extreme events could be less costly and destructive if the coastal dynamics were respected.

Dr. David Smith, ECLAC/CDCC Consultant, used a number of visual presentations to illustrate "Coastal vulnerability", focusing on the effects of hurricanes. He underscored the point made by Mr. Nurse that even when countries were not directly hit, the damage to property and to the coast itself had been great and that damages were exacerbated by inappropriate building techniques. He noted, however, that although it was important to respect the natural buffers that protected countries from extreme natural events, the small size of countries, implying limited land space, made it imperative to maximize land use. Mr. Smith ended his presentation by pointing to the various actions that should be undertaken in order to mitigate the effects of natural disasters.

Mr. Ivor Jackson, ECLAC/CDCC Consultant, identified some of the mitigation issues related to disasters, focusing, particularly, on damages caused by hurricanes. He emphasized the measures to be taken in the context of disaster mitigation rather than activities to be undertaken in the post-disaster period. In this respect, he stated that mitigation required the following:

- National policy intervention;
- Institutional strengthening;
- Financial incentives and/or penalties (market measures);
- A commitment by governments; and
- Public education, participation and support.

He also suggested that two significant elements of mitigation planning and implementation should be pre-project (pre-development) assessment and the audit of existing facilities and their present use, in order to assess their capacity in relation to the needs that would be generated by a natural disaster.

In considering the importance of gender issues, Dr. Frederika Deare, ECLAC/CDCC Consultant, emphasized that men and women were affected differently during natural disasters. These differences, she implied, were as much a result of differentials in their socio-economic

situations and roles in society, as they were a result of differences in their biological makeup and needs. Ms. Deare, therefore, recommended a thorough analysis of the impact of natural disasters utilizing a gender filter. Failure to do that could result in the misdirection of resources and an inability to provide adequately for the needs of the entire affected population.

Mr. Bissessar Chakalall, Fisheries Officer, FAO, commenced by emphasizing the definition of a disaster as an occurrence in which an extreme event coincided with a vulnerable situation. He stated that as an economy grew in terms of its GDP, for example, its vulnerability increased. When there was a natural disaster, food production was adversely affected and the small size of Caribbean subregional countries accentuated their vulnerability. He noted, however, that there were potential benefits to be gained from natural disasters and the region could learn from its mistakes and from the mistakes of others, for example, the planning process employed. Attention was drawn to the fact that aid received from external sources seldom compensated for the losses from disasters. In essence, countries had to be aware of their vulnerability and take the appropriate precautions. As such, the following mitigation measures were identified for possible adoption by countries in the subregion:

- The use of traditional knowledge and baseline information and documentation, where appropriate;
- Involvement of stakeholders in disaster prevention;
- A sustainable approach to agriculture, that is, agriculture that did not degrade the natural environment; and
- The use of agro-meteorology to provide farmers with advance warnings about the likelihood of disasters.

Mr. Sidya Ould El Hadj, Economic Affairs Officer, ECLAC/CDCC secretariat, discussed the macroeconomic impact of natural disasters. He identified some of the characteristics of Caribbean economies stating that they were typically service-based economies with a 70 to 30 per cent tradable and non-tradable ratio, as a result of the limited resources of those islands and the policies that had been adopted over the years. In addition, the geographic location of the islands made them especially vulnerable to hurricanes. GDP growth was affected by natural disasters.

Mr. Arthur Gray, Regional Adviser, ECLAC/CDCC secretariat, summed up the discussion by recalling that small island developing States (SIDS) were vulnerable because of their location in the hurricane belt. He stressed that all considerations of mitigation should be brought into play in the ECLAC methodology. He informed that disasters did not affect countries in a pre-determined form or fashion, a fact that had made planning difficult.

### **Methodological and conceptual aspects of assessment**

Mr. Ricardo Zapata, ECLAC, Mexico, introduced the "Methodological and conceptual aspects of assessment" by pointing out to participants that Natural Disaster Assessment was a development issue. He took the opportunity, at the outset, to define and clarify key words and

concepts, and made reference to the phases and cycles of the respective disasters and the specific kinds of actions required in each.

Mr. Zapata also reviewed the types of damage associated with specific natural disasters, pointing to the frequency of their occurrence in different regions of the world. In presenting the ECLAC methodology for the evaluation of damages in the face of natural disasters, Mr. Zapata addressed the following issues:

- ECLAC's experience in the evaluation of the economic effects of natural disasters;
- The vulnerability of the Caribbean subregion in the face of natural disasters, due to its geographical location and structural development characteristics;
- The greater vulnerability of population segments of lower income and their tendency to settle in areas of greater risk;
- The importance of valuation and insurance.

The following concepts were explained and discussed:

**Direct damages** - this includes damage or destruction of physical infrastructure and works;

**Indirect damages** - includes the effect of the disaster on the cost of services, decreases in revenues for institutions that provide services, relocation and retrofitting costs to facilities;

**Macroeconomic effects** - economic growth, balance of trade and payments, public finances.

### **Sector evaluation**

Mr. Zapata highlighted the drawbacks that accompanied information gaps and therefore the need for good pre-disaster statistics from population censuses and similar sources, in order to produce a satisfactory evaluation. There was need for updated and disaggregated data sets to ensure the currency and timeliness of the assessment.

He noted the need to make a separation of the loss of infrastructure and the capability to provide basic services, such as those relating to health and education, from losses in the productive sectors. Direct costs with respect to the loss of infrastructure and indirect costs due to loss of services needed to be considered and quantified.

Ms. Asha Kambon, Social Affairs Officer, ECLAC/CDCC secretariat, spoke to the topic "Estimating socio-economic effects, deepening social analysis." She specifically, focused on the Disaster Assessment Training Manual and recommended the inclusion of certain types of data, some of which are indicated below:

- The population affected by the disaster by numbers, age, sex and ethnicity, in order to determine the number of deaths due to the disaster, household data, income distribution, dependency ratios, poverty estimates and the displaced population;
- The overall demographics of the affected region;
- The distribution of employment in each of the productive sectors.

The need was identified for a comprehensive social profile of the society and community affected by the disaster, to facilitate an accurate determination of needs.

Mr. Zapata informed the meeting that the Latin American Demographic Centre (CELADE) had developed the **REDATAM** software, which enabled the creation of thematic maps based on census information and was valuable in reconstructing a pre-disaster image of the affected country or region. The software had proven valuable in the case of the assessment of Venezuela in December 1999, where some communities virtually disappeared from the map.

Mr. Zapata stressed the need for a comprehensive and updated health profile of the populace and of the education system, especially the disablement of any educational facilities and the costs incurred for such. In this regard, attention was drawn to the work undertaken by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The need for preparation of the public through the conduct of emergency drills was noted.

Dr. Frederika Deare, in her presentation on the elements of sectoral appraisal proposed that services normally rendered free of cost within the society, and the financial value of the labour input for providing such, should also be measured.

With respect to food security the meeting was asked to note that Caribbean countries were seldom self-sufficient and the issue of food security was identified as another indirect cost that needed to be evaluated , *inter alia*, involving the importation and distribution of food.

Ms. Roberta Clarke, Social Affairs Officer, ECLAC/CDCC secretariat, addressed the topic "Gender and natural disasters" which reiterated and deepened the presentations of both Ms. Kambon and Mr. Zapata. She defined gender as the set of relationships between men and women. These exerted different impacts on men and women in the aftermath of a national disaster. She noted that persons in poverty were affected disproportionately and increasingly so. Since women had a greater probability of being poor, their vulnerability increased as social conditions became harsher. Having less access to assets or property with legal title, the probability of acquiring loans for agriculture, housing and similar activities was indicated to be low. There was also the threat of domestic violence in the stressful phase of the post-disaster period.

Mr. Zapata also noted that, just as needs are different, men and women had different skills and must play different roles in the reconstruction process. He emphasized that women tended to be more risk-averse than men and, thus, could become proactive agents and promoters of disaster reduction and mitigation.

Ms. Clarke cited the relevance of the following points, towards more effective intervention by the authorities:

- Knowledge of how populations react to disasters;
- Allowing for wide participation in the process which will lead to more appropriate government intervention through the analysis by communities of their needs;
- Knowledge of social groups;

- Planners to obtain profile of population, geography, sex etc.;
- The importance of observation to the post disaster evaluation process;
- Pre-disaster gender analysis to be aware of the needs of the population that existed before the disaster as a means of assisting post-disaster assessments.

The meeting noted that if socio-economic analysis of the effects of a disaster were more comprehensive, then it would be possible to input long-term remedies for the psycho-social effects of disaster and therefore build the provision of relevant therapy into the disaster response. Most disasters were indicated to be finite in their effects, although the impact of an event might be felt over an extended period of time. However, in some cases, for example, Montserrat, the disaster and its effects were ongoing.

### **Infrastructure**

Mr. Roberto Jovel, ECLAC Consultant, gave examples of the types of post-disaster analyses undertaken by ECLAC. He placed the methodology and the issues that needed to be addressed into several broad headings: direct damages; indirect damages and macroeconomic effects.

Several illustrations were provided of the application of the methodology to various infrastructures with reference to, *inter alia*, drinking water and supply and wastewater disposal. The sub-elements identified included water sources, treatment plants, pipelines, storage tanks distribution systems and in-house connections. Subdivisions for communications, transportation, energy and housing were also provided.

Mr. Jovel noted that the evaluation of the informal housing sector presented certain difficulties, but that from a social standpoint it was important to make the relevant calculations. The costs of housing areas, of historical sites and buildings, archaeological sites for economic and tourism purposes, parks, etc., were also considered to be essential.

Mr. Lancelot Busby, ECLAC/CDCC secretariat, stressed the importance of having "back up" systems of data at the national level. He cited the example of one country, in which computers were lost in an earthquake, resulting in the irretrievable loss of information and made the case for built-in data redundancy in the planning process.

One country representative pointed to the inability to deliver aid to the needy populace because of bureaucratic constraints, citing the need for a monitoring process. The meeting was informed that modalities for the distribution of information were being developed at the present time by different international organizations, in particular, the Pan American Health Organization (PAHO), had developed a software programme to account for emergency aid and its distribution (SUMA).

A representative of Montserrat informed that his country had lost 60 per cent of its housing stock as a result of volcanic activity that commenced in 1996. Because of the small size of the community, the economies of scale and scope were unavailable and utility rates were being increased, placing more demand on the reduced population.

Mr. Erik Blommestein, ECLAC/CDCC secretariat, acknowledged the relevance of the issue of housing shortages and informed that insurance companies were now biased towards insuring housing that met certain criteria and standards. In this context, it was indicated that Anguilla had started building hurricane-proof houses following its experience in 1950 and was now using more concrete and fewer wooden structures.

### **Economic (productive) sectors**

Mr. Zapata discussed damages caused by hurricanes and other phenomena in Latin America, citing both direct and indirect damages to various sectors. He indicated the necessity for pre-disaster unit costs in these sectors and for itemization of areas of damage in each sector. He stressed that the existing methodology was an evolving instrument, currently under revision and expansion to better appraise the effects of increasingly severe events over also increasingly more complex and vulnerable societies. In addition, he emphasized the importance of assessing damages in the services-providing sectors, such as processing industries, value-added telecommunications, finance and banking, tourism and environmental services.

Mr. Blommestein noted the importance of tourism to the member countries of the Organisation of Eastern Caribbean States (OECS). He stated that tourism involved a number of sectors, which spanned a range of economic activities. Indirect damage could be as important as the direct damages within this sector. This could happen as a result of the work of a negative press and its effect on the perception of damage conjured up in the mind of the tourist, who had made plans to visit the country. He elaborated on a method of calculating the economic cost of reduced tourist arrivals.

Discussions then focused on the following:

- The importance of tourism expenditure surveys as a tool in macroeconomic damage assessment;
- The effects on the balance of payments due to the loss in tourist revenue;
- The possible offsetting of such by the insurance sector; and
- The possible necessity for subsidies that might impact the government's revenue base.

Yacht arrivals tended to rebound quickly to former levels as did cruise-ship tourism. The economic yields from the latter were estimated to be relatively low.

### **Information systems**

Mr. Busby referred to the definition of "direct damage" as including all damage sustained by immovable assets and inventories (of finished and semi-finished products, raw materials, other materials and spare parts). Direct damage tended to occur simultaneously with the disaster. Indirect damage referred to damage to the flows of goods that ceased to be produced or the

services that ceased to be provided during a period of time beginning almost immediately after the disaster and possibly extending into the rehabilitation and reconstruction phase. He advised that assessors should gather as much information as possible using various means, including whatever databases were available, to assist in the determination of the extent of damage. The banking sector might also be able to assist in the exercise to the extent that they were a source of relevant data.

With respect to national accounts, time series data accompanied by detailed tables and a model of the economy were considered to be useful. The databases of the International Financial Institutions (IFIs) could also be queried for comprehensive national data.

Mr. Chakalall reviewed the impact of disasters on agriculture and an overview of the agricultural sector in the Caribbean over the last 20 years. He directed attention to the need for data and information to assess losses and noted that the FAO had information that might be useful in the estimation of imports and exports.

He pointed out that damages might occur to the fisheries sector, for example in the event of a swell, without the occurrence of a major natural disaster. He informed of the emergency routine followed within the agricultural sector in the aftermath of a disaster. Mention was made of the sometimes-positive impacts and correlative effects of disasters, whereby, for example, increased rainfall might produce increased productivity within a sector.

Within discussions on environmental damage, the necessity of capturing such variables as loss in forest cover and marine resources was stressed.

Some participants noted that increased vulnerability had resulted from mismanagement in the economic, social and environmental aspects of the countries. In the Caribbean, more careful attention needed to be paid to infrastructural placement, especially that related to tourism.

The meeting urged caution with respect to building in reclaimed coastal areas, without taking into account the probabilities of the occurrence of disaster in the future.

### **Effects of damages**

Mr. Zapata stated that the long-term impact of catastrophes depended on:

- The hazard risk;
- The expected frequency or magnitude of the event; and
- The affected area including the distribution of services available for coping with disasters.

A pertinent issue, when considering the ability of a country to sustain the economic disturbance generated by a disaster (macroeconomic resilience) was that of its foreign debt. The commitment of the domestic and foreign-based financial resources needed to be examined, along with internal economic impacts of the natural event.

Vulnerability to natural disasters might become chronic following a pattern along the lines of the following chronology of events:

- (a) A high level of damage is sustained at the time of the event;
- (b) A stabilization or recuperation stage (the post-disaster phase) is initiated;
- (c) A progressive loss of interest in and memory of the disaster and hence, owing to lack of historical awareness, future natural events could cause as much damage as previous ones, due to lack of preparation.

To prevent a similar situation, it was necessary, after the period of stabilization and recuperation, that documentation of the event and planning should proceed apace.

A notable feature of natural disasters was their effect on the rate of gross capital formation in the affected countries. Evidence indicated an adverse effect on the economic performance, followed by restored growth, but at a lower level than in the pre-disaster period. It was noted, however, that there were other factors that might produce the observed effects, in concert with the disaster, so that the event could always be identified as being the chief causal factor in an economic downturn.

In seemingly anomalous examples where economic growth seemed to resume just after the disaster, the phenomenon was attributed to the rapid inflow of financial and other forms of aid. At any rate, post-disaster reconstruction-led growth tended to be short-lived and was done at the expense of other investments that were either postponed or abandoned.

Great importance was attached to the disaggregation of the effect of disasters on the various sectors of the economy and society so that appropriate strengthening of those sectors could help to reduce their vulnerability to disasters. Inherent in that strengthening process was the need to appreciate climatic cycles, such as El Niño, and seasonal extremes, such as drought or floods.

The meeting noted that studies should be commissioned to determine methods for enhancing the macroeconomic resilience of vulnerable nations and to provide income support to the poor who tended to be disproportionately affected. Replacing damage to infrastructural stock depended on the characteristics of the affected countries, including budget flexibility, the structure of the tax base, the ability to raise domestic credit and accessibility to foreign donors or creditors.

Mr. Busby commented on the general lack of reliable data or, at times, the inability to locate data because of the improper methods or systems of information storage prevalent within the Caribbean. He further suggested a macroeconomic assessment approach that examined the interaction between the various sectors present within any given society, the importance of the sectors and institutions that might function as data sources.

He stressed the importance of a notion of the country's "value chain". The information yielded could be used in the estimation of the economic damage caused by a disaster.

Also stressed was a need for a less piecemeal approach to sectoral analysis since the economy needed to be viewed as a whole. The need within the Caribbean for proper time series analysis was observed and representation to the relevant governments to stress the importance of collecting such data was urged. It was also emphasized that within any economy, the major determinants of economic performance should be identified in order to ensure the preparation of an assessment that was realistic and reliable.

Mr Busby recommended measures to institute vulnerability reduction, including an effective disaster mitigation policy, building procedures and rules that took into account the peculiarity of the situation in each island. Other recommendations included statistical systems for information-gathering and quick response and the conducting of audits to enable proper disaster planning and the decentralization of data-storage facilities.

An open discussion then followed and within this context the following issues were raised:

- The quality of the data available should always be evaluated before such data could be used;
- There was need to consider a methodology for evaluating the intrinsic net worth of ecosystems independently of whatever infrastructure might be protected by them. Further, the environmental service provided by ecosystems and resources were usually undervalued.

Mr. Ould El Hadj suggested that a clearer picture of the economic impact of a disaster could be obtained if one considered its effect on the ability of the county to continue its debt servicing. An examination of the volume of exports after the event would be an appropriate indicator in this regard.

The effect of a disaster could affect the public sector finances through a resultant inability to meet the budgeted wage bill, infrastructural investment, change in consumption pattern due to the importation of food and other necessities and the level of borrowing on the internal and external market.

The meeting was cautioned that damage assessments should be done in such a manner as to ensure their credibility. This meant that care had to be taken to find the best estimates possible and present the best report possible. The World Bank had shown an interest and had accepted the ECLAC methodology. There still existed the need for a more thorough methodology for the evaluation of environmental and social impacts.

### **Institutional capacity**

Mr. Gray addressed the topic of institutional capacity and disaster mitigation. He observed the intrinsic vulnerability of SIDS and pointed out the relevance of institutional capacity before, during and after natural disasters.

At the national level there was the need for preparedness in terms of enforcement of building codes and regulations, land zoning and other mitigation processes, including public and private sector training and cooperation, training for local communities and contact with other States.

Within countries one should locate persons who could be trained to appraise, measure and quantify costs of disasters. Further, project formulation ability should be a key skill to facilitate the rapid transfer of external aid. In addition, stand-by arrangements would be needed for rapid intervention to key aspects in the economy, for example, the farming community and the removal of administrative rigidities, to allow for quick, effective and easy transfer of resources.

At the regional level mechanisms could be promoted for sharing information, disaster relief funding and possibly new governance systems including *inter alia*, the use of the private sector's capacity in mitigation and general cooperation related to disasters. The private sector should be encouraged to recognize the benefits that could be derived by helping in the process and one might use incentives based on market operations to encourage participation.

Participants acknowledged that different institutions were required for the different phases of the disaster, as well as for sound policy development so as not to reduce the ability of a country to withstand disasters.

Mr. Ould El Hadj highlighted the vulnerability of SIDS in the context of the high cost of transporting goods to and away from them and the small quantity of goods being ordered.

In SIDS, generally, social and other infrastructure tended to be costly and technical expertise was lacking in many areas. This frequently led to the performing of a number of separate technical duties by one person, which did not facilitate efficiency. Further, due to their small human and natural resource base, the ability to diversify or find other options for economic activity was severely limited. Their small economic size might also lead to monopolies within their systems.

SIDS tended to have very open economies in the sense of a heavy dependence on foreign trade. This dependence on trade might be debilitating when there was a softening of demand for their products.

Mr. Busby opened the floor for discussion with a summary of Mr. Ould El Hadj's contribution. The following were raised:

- In many cases the contracting of foreign expertise for SIDS was an expensive option and lack of government planning and interest in disaster mitigation continued to increase the vulnerability of SIDS;
- While, in many instances, there were rules and regulations in place to militate against the effect of natural events via planning and other legislation, enforcement was frequently lacking;
- Regional attempts at cooperation and collaboration have not been encouraging, part of the problem being the cost of communication imposed by the insular environment;
- The need for education at the political level and at the level of the private sector together with the use of Environmental Impact Assessments (EIAs) as a tool in the mitigation process;
- The need for the development of “within-country” capacity for damage assessment.

The representative from CDERA, Mr. Jeremy Collymore, directed his comments to capacity building after the disaster. He observed the absence of a tool to provide consistency in data collection. He observed that critical needs, for example, after Hurricane Lenny, were not quantified and that different units of measurement had been used in the studies. In addition, analysis had not been coordinated. On the subject of institutional capacity, there was need to change behaviours, enhance capacity and build in resistance and resilience. He observed that coordination between and among agencies should be enhanced, as many players tried to collect essentially the same information. Hence, protocols for data collection needed to be developed.

Recognizing that data collection was the largest challenge and the hub around which the assessment revolved, the CDERA representative thought that as a priority one should decide where to target as the first point of data collection. He advised that all agencies should be clear about strategies to be used in data collection, citing examples such as overflying or the use of infrared strategies. He observed, however, that in some instances collected data were not always collated and used. He recognized that the measurement of an impact indicator would differ from sector to sector, but articulated that the measures to be used should be studied carefully. Agencies should agree on the contribution of each sector and that logistical issues, for example, the absence of claim forms, should be addressed. Mr. Collymore suggested that beyond providing a general orientation, training should be targeted to specific sectors.

On issues of policy, the CDERA representative expressed the need to receive information from the sectors as a matter of course. In this regard, he referred to the efforts of his organization and those of the United States Agency for International Development (USAID) in the health and housing sectors. He informed that his organization had embarked on work with the FAO in the agricultural sector. He noted, however, the need to define the possibilities and methods of enhancing the process. He suggested that the ECLAC methodology should be made more effective along these policy lines.

Mr. Collymore ended by suggesting a way forward. This addressed three concerns:

- (a) The establishment of an inter-agency task force to examine different sectors and rationalize activities;
- (b) The optimized use of field tools to improve the consistency of information collected;
- (c) The enhancement of a capacity in data management and use.

In the discussion that followed, the following points were raised:

- In many instances data that could be used for damage assessment or mitigation was available, but its translation into actions, projects or mitigation policy was not adequately archived;
- Data entered should be analyzed; the analysis sometimes may require a time series of data, but computer programmes existed which could fill in the data gaps in sets;
- Disaster relief should be looked at within the context of constructive, long-term development-oriented aid, since at the present time lending institutions tended to place money into immediate reconstruction – a reactive response - rather than into prevention-mitigation risk reduction investment – a proactive mode – that was more desirable.

### **Definition of the reconstruction strategy**

Mr. Gray addressed the considerations and methodology associated with the preparation of projects for reconstruction following natural disasters. He explained that the identification and preparation of projects should be done on the basis of a more precise identification of the problems associated with such disasters. The need to identify all available resources to be used as inputs into the reconstruction process was highlighted, as well as the need to prioritize proposed projects, based on their ability to reduce the vulnerabilities and weaknesses of affected countries.

Mr. Zapata explained that reconstruction was dealt with in a broad conceptual manner in the ECLAC methodology because policy makers did not usually have control over resources for reconstruction. Countries that had experienced a disaster usually needed to obtain external financial assistance. The overall quantum of such assistance had been declining and usually had been directed mostly towards emergency relief. In this context, international agencies tended to identify projects and programmes during the immediate post-disaster period on the basis of their own evaluations. This did not allow the affected countries much freedom for selecting and prioritizing projects in accordance with their longer-term needs. It was, however, increasingly recognized that countries should be responsible for the development of their own reconstruction programmes.

Ms. Kambon reviewed the social sector dynamics to be considered in a reconstruction strategy. She emphasized the absolute need for baseline social data, which were now more

readily available because of recent studies and on the basis of the assessment of the physical damage caused, have a more comprehensive social impact assessment of the disaster.

The issues to be specifically examined were: poverty, migration, household structure, health and food security.

Methodologies of collecting baseline data in the short space of time necessary for providing relief to the affected populations were discussed, with Ms. Kambon pointing to the various sources of social data now available for this purpose. Participants also discussed the use of indirect valuation methods in assessing the situation.

Mr. Jovel advised on the most appropriate time for entering a country to initiate a disaster assessment. In the first few days after the disaster, assessment teams were more likely to be a hindrance. He advised that personnel could more profitably spend their time collecting baseline data from secondary sources outside the country and that one month after the disaster was probably the most appropriate time for on-site assessment.

In the ensuing general discussion, the following recommendations were made:

- There was need for a more intimate link between the reconstruction process and the overall development goals of the country. Reconstruction strategies should be thorough, long term and under the guidance of a lead agency, such as, for example, the government's planning agency. Monitoring should encompass an evaluation of the effectiveness of activities. Experience showed that poor strategies had led to aggravated problems when natural events recurred;
- Reconstruction processes should be located within the development strategy, but should not be synonymous with them;
- Relocation strategies needed to be more long-term in their outlook;
- Reconstruction funds should be identified from sources other than from pre-existing development funds, that is to say, they should be additional and not merely the reprogramming of available resources.

The following constraints to the reconstruction process were pointed out:

- Quick fixes being applied in order to facilitate persons who might have been deprived of access to important aspects of their daily lives; and
- The prevailing culture's attitude toward risk management; and
- The availability of funds and their "conditionalities" that led to preferring the use of some strategies to others, or assigning priorities to some sectors (physical infrastructure) over others (social, productive).

### **Closing remarks by presenters of the methodology**

Mr. Zapata thanked participants for their inputs and indicated that the exercise had been very useful in his search for tools and measurement instruments for disaster assessment. He

noted the focused attention being paid to the issues related to the small size of Caribbean countries and stated that the exercise had heightened his appreciation and understanding of the vulnerabilities faced by these countries.

Mr. Jovel commented that in the initial development of the ECLAC methodology, its widespread use and reception had not been envisioned. The methodology was intended to provide an assessment of natural disasters from a macroeconomic point of view for a specific country. Since then the necessity of the inclusion of a social perspective and other areas had become clear. He was satisfied that the present forum was able to work together to modify and improve the methodology in order to provide a tool for application in the entire region. He believed that the insights and perspectives on the effects of natural disasters on SIDS ought to be included in the manual.

### **Feedback, critique and comments on the ECLAC methodology**

One day after the end of the workshop, the Director, the ECLAC staff who participated in the workshop and the consultants met to review the workshop. The Director invited the consultants to share their thoughts on the manual with a view to improving it and bringing it in line with contemporary issues of development.

Mr. Zapata informed the meeting that while ECLAC addressed disaster issues into its work programme, they would be addressed through usage of extrabudgetary funds, at present mostly provided by the Dutch and Italian Governments. Under those projects, the methodology was being revised and should be completed by October/November of 2000.

Comments on presentation and contents of the manual were then requested. Within this context, the following recommendations were made:

The need to incorporate:

- Caribbean-specific examples in addition to other examples from Latin America;
- An executive summary to highlight the key areas of the process followed by an annex which, demonstrates the application of the methodology, for example, using the Anguilla data;
- The environment, marine and tourism sectors and the impact and interrelations between disasters and the environment;
- Other service sectors;
- The agricultural sector, inclusive of forestry and fishery elements, updated to show Caribbean realities;
- Issues related to pre-disaster planning, to be dealt with in the final chapter of the document i.e., planning guidelines and policies which mitigate against disasters such as proper mapping and identification of hazardous zones;
- A glossary and definition of the terms used in the manual;
- Detailed descriptions of the most common types of disasters and frequency of disasters in the region;

- An explanation of how damages occurred;
- A description of the characteristics of hurricanes, the most vulnerable countries, cycles of intensity, etc.;
- A list of data sources in the Caribbean;
- Clarification of the objectives of the manual and each chapter, especially for training purposes, as reconstruction is only one phase in post-disaster assistance;
- A description of the benefits of using the manual as an input to the overall development process;
- Case studies, both successes and failures, to give insight on calculations and evaluations;
- In the preface/introduction, acknowledge the limitations of the manual;
- A checklist of priorities for assessment;
- Methods to establish proxy values;
- An expansion of the present tables;
- Checklist of damages and a field assessment tool kit;
- Some indication of the target audience for the manual and for the assessment studies;
- An addressing of task allocation at the community and national level for evaluation purposes and for policy formulation;
- An evaluation of damage of underground aquifers and management of hazardous wastes;
- Methodologies that appreciate the different value of the same resource within different states for evaluating environmental damage should be included.

The meeting observed that the manual:

- Could be made more accessible and user friendly using Internet technology;
- Should address macroeconomic (secondary) and longer-term effects of disasters in the framework of a reconstruction strategy;
- Should be such that any country should be able to utilize it and should provide a basis for comparability;
- Should be used to engage in the training of persons who could assist the disaster assessment team in strategy and policy formulation.

Participants and organizers noted that environmental issues should be represented across all issues and sectors and that the same would be applicable to gender issues. Separate chapters, as well, could be written on these areas. The ecosystems of small island developing States needed special attention aside from the linkages to the different issues. The development of a methodology applicable to different types of ecosystems should therefore be considered.

### **Disaster assessment experiences**

The meeting noted that both sectoral analysis and macroeconomic appraisal were important to the disaster assessment exercise, in view of the fact that such analytical capabilities

were in relatively short supply in the government sector. Much country analysis was effected by missions of regional and international organizations, including ECLAC. ECLAC had standard tools and paradigms for the evaluation of disasters. Its evaluations had assisted in obtaining funding from international sources.

Sectoral data produced by the countries under study were used to the extent of their availability. In their absence, a direct assessment was done. In the OECS, data were primarily applied to coastal zones while FAO data were applied in the agricultural sphere. Sectoral reports tended not to include indirect or macroeconomic/secondary damage estimates. Care had to be taken to avoid double counting since data or reports within countries tended to be sector specific and did not consider cross-sectoral relationships. The report entitled “Anguilla: An assessment of economic and other damages caused by Hurricane Lenny”, November 1999, prepared by the ECLAC/CDCC secretariat, was used to illustrate the importance of ECLAC’s intervention since the Government of Anguilla had used the document to reassess its national budget.

On the issue of data for the tourism sector, estimates could yield inaccuracies since this sector had shown a tendency to increase or decrease rapidly on a yearly basis on occasion, hence the importance of time series. Most assessments focused mainly on damage to government property and gave the private sector minimal attention. This presented inconsistencies, which led to biased assessments.

Insurance data was an important element to assist in making estimates both at sector level and globally. The strength of the ECLAC methodology lay in the evaluation of indirect and macroeconomic effects. These were the more difficult to undertake. Macroeconomic/secondary impact was seen as being more important because of the use of micro information. The use of econometric tools and techniques, such as regression analysis, was suggested for incorporation into the manual and application in the evaluation.

Participants discussed the formation of teams of local counterparts to ECLAC’s experts. This has aided in the past for a profitable interaction with the local people and understanding of the local development issues.

With respect to social and economic analysis, the meeting noted that the manual was not, at present, explicit enough and observed that socio-economic assessments were mostly implied in the macroeconomic analysis and that growth and equity should be explicitly stated. It was therefore necessary to separate the population component for purposes of a more thorough social analysis.

Participants also contributed the following comments:

- The section on gender needed to explicitly justify its inclusion to gain acceptability and commitment;
- The appendix should show baseline data needed to do assessment and where to obtain them;

- The development of information such as balance of payments, external debt, and the work of national accounts statisticians should also be visited and incorporated in the evaluation process and as part of the data source;
- The precise concerns of various specialists in specific sections on SIDS in relation to cross-cutting issues should be included;
- The extent of incorporation of government systems issues in all phases of disaster intervention should be explored;
- The special status of NICCs, with respect to disaster response, should be studied. It was reminded that ECLAC documents existed that addressed issues of size and development;
- Need for ECLAC to engage in advocacy to advise on pre-disaster information systems to be put in place using paradigm of disaster process to be built into information systems;
- The methodology has been used for other intervention purposes other than natural disasters, for example, military conflicts in Central America and for institutions, such as universities and the academic community that could benefit from the information. The materials could be used as reference for courses or for the development of courses, for example, in applied economics; and
- Validate data accuracy when using information.

### **Policy implications**

This session addressed the following:

- The policy implications of the ECLAC methodology of natural disaster assessment;
- Its operational aspects; and
- The revision and modification of the ECLAC methodology.

The meeting discussed the usefulness of the methodology in allowing governments to introduce policy measures to overcome negative effects of disasters. Participants hoped that it would generate discussion not only at the government level but also with other stakeholders. This would allow for feedback that would inform the identification and prioritization of relevant areas.

The meeting supported the introduction of a new chapter on reconstruction strategy that would transform the list of project profiles into a more integrated and structured methodology within a developmental framework. It addressed the importance of the collection of baseline data that would inform policy as well as the identification and prioritization of projects in the reconstruction phase. Participants pointed to the importance of data collection in the emergency period as an input to the reconstruction strategies in the post-disaster period.

The meeting noted that disasters tended to dramatize weaknesses in existing policies prevalent at both national and international levels. In that regard, it was suggested that care be

taken not to critique or develop policies for countries but to assess the situation at hand and make recommendations in light of existing policies.

Assessment reports could incorporate recommendations of developmental policies. In that context, the meeting suggested that alternative ways of reporting should be used to provide countries with various policy options and implications of those policies. It was also suggested that the impact of sectoral policies could be added to the methodology.

The meeting also looked at **institutional capacity, available human and financial resources** and **risk management**. Attention was drawn to the fact that institutional capacity could be viewed from many angles. Those included:

- Identifying roles and responsibilities;
- The need for coordinating mechanisms;
- The need for participatory mechanisms to give ownership to the process; and
- The need to create other mechanisms for sustaining the process.

Institutional capacity also included the capacity of affected governments to prepare project proposals. An inability in this area could severely constrain countries' progress in reconstruction and rebuilding, thus reducing their capacity to direct their development path.

Risk management was indicated to be important for reconstruction and mitigation in the event of natural disasters. The identification and quantification of risk was seen as an essential pre-activity for complementing the risk management process. Traditionally, in the assessment process, risk management was viewed only from the perspective of land use. The meeting, however, suggested that this perspective needed to be expanded to include the following:

- The question of adherence to regulatory codes, incorporating insurance companies and banks as allies; and
- From a social point of view:
  - Access to public information;
  - Social integration;
  - Skills capacity for social mobilization.

### **Follow-up**

The ECLAC/CDCC secretariat thanked the participants for their inputs. The Director explained that recommendations arising out of the meeting would be incorporated into the revised ECLAC methodology and participants were requested to submit their contributions to the secretariat. ECLAC would convene a meeting in Mexico, in September 2000, to discuss the first draft of the revised manual where consultants would be able to discuss the issues from a Caribbean perspective with their counterparts in Latin America. Subsequently, a final meeting would be held in October 2000, at which the final version of the revised manual would be presented.

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