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**REPORT ON WORKSHOP ON DISASTER VALUATION
ECLAC'S METHODOLOGY AND PREPARATION OF
A REVISED TRAINING MANUAL**

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Background

Under the ongoing ECLAC-World Bank's Disaster Management Facility cooperation activities, a workshop was convened at the ECLAC Subregional Headquarters for the Caribbean in order to advance in the harmonisation and further expansion of training materials for the current methodology on the socioeconomic and environmental impact assessment of disasters. For several years a number of materials have been prepared in all of ECLAC's offices and the Caribbean subregional headquarters have compiled and prepared in CD format an "ECLAC/CDCC Disaster Assessment Training Manual for Caribbean Small Island Developing States". This material was gradually developed in recognition of a need to build capacity, through training, in the use of the ECLAC disaster assessment methodology in the Caribbean. A second objective in preparing this training manual was to refine aspects of the ECLAC methodology to make it more relevant and suitable to the characteristics of Caribbean islands. The training manual was continually revised from 2000 to 2003.

Over the same period ECLAC, under the coordination of the designated Focal Point for Disaster Assessment, a revised methodology was completed, with contributions from staff in its offices in Santiago, Mexico and Port of Spain, and with contributions from external consultants and the extra-budgetary cooperation of the Governments of Italy and the Netherlands. This revised "Handbook for Estimating The Socio-Economic And Environmental Effects of Disasters" was printed in 2003 with the cooperation of the World Bank. ECLAC has since embarked on a training programme, not only for the sub-region but also, in partnership with the World Bank and later also with UNDP/ESCAP, in Asia and Europe. Since at present a number of training materials have been prepared, following the completion of the revised version of the methodology, it was considered necessary to revise them all for consistency and ensure a full coverage of the range of relevant issues. In the case of the Caribbean such training courses have taken place since 2000 in the Subregional Headquarters, in the British Virgin Islands, Belize, Jamaica, St. Lucia, Trinidad and Tobago and Haiti, this latter one in French). Similarly courses have been undertaken in South and Central America as well as in Mexico and, over the last two years at the request of the World Bank, training has been undertaken in Southeast Asia also.

The main objectives in revising existing training materials would be to extend their coverage in order to have appropriate and relevant examples, exercises and case studies for the different sectors and relevant issues for the whole of Latin America and the Caribbean and, by extension, to other developing countries. Thus, the two-day workshop would address gaps in coverage as well offer an opportunity to revise existing chapters with particular reference to:

- Agricultural assessment, with specific examples on permanent or multi-annual yielding crops and plantations, annual crops, and their classification as direct/indirect.
- Assessing damages for cultural heritage: direct and indirect and the use of indirect means to assess asset losses.
- Environment aspects, not covered, and expand marine and non-marine impacts, e.g. flooding, landslides, emphasising the cross-cutting nature of environmental impacts, including considerations of climate variability and change.
- Include more extensive examples and exercises (such as the SARS and water examples and others prepared both in the Latin American and Caribbean context).

A decision was also made to use the opportunity of the workshop and the presence of staff from the three ECLAC Offices, Mexico, Port of Spain and Santiago, to introduce the major concepts of the ECLAC assessment methodology.

Workshop objective

The output of the workshop would be a plan of the task ahead to achieve revised and upgraded training materials that would be available for training activities. The ideal medium for these materials was also to be analyzed, including the possibility of using the CD format and including them on the ECLAC website. In connection to the medium desirable and possible format, it was considered that, through continued collaboration with the World Bank Institute training modules for distance learning could possibly be developed, expanding from a just completed effort that was presented at the workshop.

Attendance

Participants included representatives from the Transport and Natural Disaster Division of the Association of Caribbean States (ACS), the Department of Civil and Environmental Engineering of the University of the West Indies (UWI), ECLAC staff from Mexico, Port of Spain and Santiago and two consultants. A list of participants is attached as Annex 1 to the present report.

Participants to the introductory course were drawn from the ACS and from the economics, social, sustainable development and the programme units of the ECLAC Subregional Headquarters for the Caribbean. A list of participants is attached as Annex 2.

Agenda

The workshop proceeded in accordance with the Programme as appears in Annex 3. The programme for the introductory course appears at Annex 4.

Opening

Mr. Rudolf Buitelaar, Officer in Charge of the ECLAC Subregional Headquarters for the Caribbean, welcomed the participants and thanked them for attending the meeting. He particularly welcomed the participants of the ACS and UWI and saw this workshop as an opportunity to strengthen the working relationships between ECLAC and these institutions.

He emphasized that the ECLAC disaster assessment methodology has been widely appraised and he encouraged participants to engage in discussions to improve the training manual and widen its scope.

Mr. Ricardo Zapata, ECLAC focal point on disaster evaluation, in his opening statement, pointed to the major collaborative initiatives concerning methodologies for disaster evaluation and reduction that had been launched among ECLAC, ESCAP and the World Bank. As a result, ESCAP had received training in disaster valuation and the ultimate aim is to pursue multiregional collaboration in disaster valuation and reduction. Surprisingly, information from training missions has shown that countries across the board are largely unaware of the full economic impact of disasters and that significant efforts remain to create the required awareness and understanding of the full costs.

He acknowledged the support of the World Bank Disaster Management Facility in convening this workshop. This particular workshop was internally oriented and was also intended to expose other staff members within the Subregional Headquarters of ECLAC in the Caribbean to the disaster assessment methodology, and as an outreach to other organizations with whom ECLAC has close affiliations, e.g. the ACS.

The current workshop would address shortcomings that had been noted in the areas covered. In particular, there was a need to link disaster reduction to poverty reduction, in general, and how disasters impacted attainment of the Millennium Development Goals (MDGs), in particular. It was necessary to present the material in the training manual in a comprehensive manner and in a way that was compatible with and addressed local situations.

Mr. Erik Blommestein, the ECLAC Port of Spain focal point for disaster assessment, pointed out that the Caribbean Training Manual was to be expanded to include aspects relevant to Central and Latin America. Participants should strive to strengthen the current weaknesses pertaining to environment, agriculture and cultural heritage, amongst others. Also, the textbook exercises and examples outlined in the manual should be improved in terms of level of rigor.

Issues of terminology and conceptual harmonization between the methodology and training materials

The risk formula

Discussion revealed that it was necessary to carefully define several key concepts in the training manual, which should be used consistently according to their definitions. Among these concepts, three in particular were discussed in detail. These were hazard, risk and vulnerability. The ensuing discussion focused on the precise meaning of the terms ‘hazard’, ‘risk’ and ‘vulnerability’, and not all participants agreed at the outset. However, it was agreed that the concept of risk should encompass the frequency or probability of the occurring disasters. The concept of hazard should capture the exposure to, and threat of, a natural disaster, whilst the concept vulnerability should only be used in a negative connotation pertaining to weakness. Problems also occurred in translations since for example, in Spanish there was no term that translated the English words “vulnerability” and “resilience” in the context in which they were used in the disaster assessment manual.

Within this context, the focus of national and international agencies was increasingly on risk management. For example, Mexico has done some hazard mapping of various areas and was now attempting to map risks, inclusive of risks due to non-natural causes, such as explosions, fires, oil spills, etc¹.

The basic stock-flow model

Training sessions have shown that trainees find it difficult to distinguish between the concepts of ‘direct damage’ and ‘indirect damage’ when referring to them with the ‘stock-flow-model’, as is the case of the handbook or the training manual. Rather, ‘indirect damages’ should be referred to as ‘indirect losses’, a concept that business people, especially, could seemingly relate to more easily.

Hence, in defining concepts and terms, *damages* should refer to physical damages as a consequence of the disaster, during the disaster or immediately after. *Damages* are measured in physical terms and can be expressed in monetary terms. They pertain to assets – to the stock of wealth owned by the economy at the time of the disaster. On the other hand, *losses* pertain to changes in flows in the economy over time and hence necessarily take place after the disaster. They are, for example, the result of lower production, trade, less tourism, lower revenues and increased costs, either to the private or the public sector. In fact, *indirect losses* are a consequence of the *direct damages* that have arisen, as the latter impedes on the proper functioning of the economy affected by the disaster. All in all, the total sum of direct damages and indirect losses then yields the overall cost of the disaster.

Social capital

The concept of ‘social capital’ was discussed. Consensus was reached that measuring damage and loss to social capital in monetary terms was essentially impossible as ‘social capital’ is usually referred to in an abstract manner and is inherently difficult to value. Nevertheless, damage assessments needed to explicitly point to damage and losses of social capital, even though valuing them in monetary terms was not possible. Within the context of the training manual a Caribbean case study could focus on the dispersion of the population of Montserrat following the eruption of the volcano.

The affected population

In order to more clearly define the concepts of ‘primary’, ‘secondary’ and ‘tertiary’ affected populations, it was proposed that examples and exercises be developed. The basic definitions were recalled: in particular, *primary affected* should refer to the population that suffered direct damage, from lives lost; population injured or had damage in their personal or family assets. *Secondary affected* population is to be considered that group that suffered indirect losses, such as increased costs, trauma, etc. and *tertiary affected* refer to those who are affected by the global effects of the disaster even though they maybe geographically far from it. The latter may suffer

¹ It was suggested that the training manual needs to consider these non-natural events and the effects thereof also.

due to e.g. a disruption in the services they receive, due to funds being re-directed to the affected area using resources originally budgeted for other purposes in other regions.

Macro effects

In addition, rather than referring to ‘secondary effects’ in the handbook, one should be more precise and use the term ‘macroeconomic effects’ or ‘macro-social-environmental effects’ or just ‘macro effects’. In this respect the impact of the macro effects on the achievement of the MDGs was seen as an extension of the analysis. A similar example was cited of the impact of earthquakes on the regional human development indices in Salvador.

The decision was made that the training manual should include a chapter on concepts and definitions.

Gaps in coverage as well as need to revise existing training materials

Agriculture

The need to include exercises and case studies on the assessment of damages to agriculture was emphasized, acknowledging that this sector bore more relevance and importance to Latin America and Central America than to the Caribbean. In particular, experience has suggested that sometimes sector specialists have problems in distinguishing between direct damages and indirect losses in this sector. Improved examples and exercises will alleviate this problem.

Whilst direct damage referred to assets such as irrigation, infrastructure, silos and tractors, it also referred to crops already harvested or that had been in essence ready to be harvested. Indirect losses, on the other hand, pertained to crops in the early stages of growth as well as potential crops that could no longer be grown (planted and harvested) due to the effects of the disaster. In the case of plantations, the loss in production resulting from the time span required to grow new trees to maturity to replace those destroyed had to be accounted for. In this instance, the relevant prices needed to value lost crop were farm gate prices that existed *prior* to the disaster (as prices for commodities generally increased following a disaster, which would lead to an overvaluing of damages). Two further issues emerged:

- (a) How to value non-export crops. In many instances, damage to non-export crops was difficult to assess due to the lack of existing data since there was often no basis for assessing the importance of those crops and actual size of the sectors prior to the disaster.
- (b) Subsistence farming would be affected by the disaster, however, by definition data on subsistence farming was scant, resulting in an inaccurate appraisal of damages incurred.

The agriculture sector was one in which a large proportion of females were economically active. Therefore, gender-specific examples should be given in the chapter and trainees should be made aware that damage to the sector might affect the genders in different ways, which must be accounted for and made explicit in the assessment reports.

Generally, more examples and exercises should be included in the manual to make the distinction between seasonal crops, annual crops and plantation crops clearer. Further exercises and examples pertaining to subsistence crops and livestock would also be of order, as would examples dealing with fisheries – both associated to catches and fish and aqua-farming.

Attention was drawn to the fact that assessments should explicitly state the assumptions that were made on crop trends prior to the disaster.

Biodiversity and the environment

With regard to biodiversity and the environment, the issue of how to value biodiversity was made. Whilst biodiversity was an important area, capturing it in assessment reports was not an easy task. This was not only related to the fact that one must identify which damages to the environment should be reported – it was unlikely that damages to the environment outside areas of human habitat (e.g. in dense forest areas) would be included – but also to the fact that assigning a monetary value to the environment required being able to appropriately value the environment. Although several studies can be drawn upon which provide baseline data on how to value biodiversity, the majority of these studies were largely not performed in the region, hence may not reflect the ‘true’ value of the environment to the region.

It was suggested that satellite imagery could be a useful source of information to assess the state before and immediately after the disaster and become familiar with the effects prior to departure to the affected area for assessment.

Cultural heritage

There was a need to strengthen the coverage of cultural heritage in affected areas, especially given its effect on tourism and the importance of tourism in regional economies. However, no methodology existed for assessing the value of cultural heritage sites – a problem that the United Nations Educational, Scientific and Cultural Organization (UNESCO) also faces. In particular, it was possible to estimate the effect of indirect losses – measuring e.g. the loss to tourism – the direct damages to these sites were difficult to assess. Although one possibility would be to turn to the restoration cost as a proxy, this approach was not entirely satisfactory.

The current situation and problems faced in valuing cultural heritage and assessing the effects of disasters remains an important task for the future. The team agreed to draw on the experience of UNESCO and a proposal was made to draw upon an expert from UWI and report progress of his research on this issue for the Caribbean.

Industry

It was more difficult, than normally assumed, to assess the damage and losses resulting to industry due to the inherent ownership structure of the sector. Because of the large number of actors in this sector, a majority of which were private agents, general as well as specific information was difficult to come by. Although organizations, such as chambers of commerce, might be useful since they possess detailed information on large proportions of the sector, the level of accuracy of such data might be lower than desirable. In general, industrial surveys might provide useful baseline data.

Cross-cutting aspects not reflected in national account variables

The methodology, in order to be a useful tool for reconstruction and mitigation, must value damages and losses that were not systematically accounted for in the national accounting system and were often crosscutting.

Gender was an issue that cross-cut all aspects of disaster valuation, as gender aspects were related to the entire economy. Although precise guidelines were difficult to draw, it was necessary for trainees to be aware that a gender dimension would exist in almost all issues. As such, it could be pointed out that gender would be found in industry, in general, and agriculture, in particular, an insightful approach to gender was to consider how the burden of females in the economy had been affected (generally increased) due to the disaster. These costs should be captured and assessed.

Related to this was employment, in general, which would be affected by a disaster. While it might, to a certain extent, entail increased employment opportunities (due to reconstruction, for example), it would result in the loss of livelihoods. Therefore, it was necessary to be careful when taking compensation mechanisms, such as the existence of employment benefits, into account.

Summation of direct and indirect effects

Apart from the need to carefully summarize direct damages and indirect losses, it was necessary to avoid double counting – also across sectors because losses which often accrued in the agriculture sector and the industry sector were overlapping, resulting in double counting. In addition, the need to make certain *comparisons* was emphasized, that is, total effects should hence be divided into production losses, increased costs/lower revenues, etc. This would assist in calculating the time taken to recover from the disaster. It was also essential to compare losses accruing to the private sector and those accruing to the public sector, to facilitate identification of those who had suffered losses and those who might apply for funding from various sources.

Participants were then shown demonstrations of economic models used in disaster assessment. It was noted that these models were not designed specifically for disaster assessments, but had been introduced, realizing that they would have to be used, in the majority

of cases, in developing countries. Even so, requirements for information to do the requisite analyses were usually not available.

The cost of “sub-disaster” events, which were events occurring on a regular or discontinuous basis causing cause no major disruption to the economy of the country concerned, should be considered. In Central America these have been assessed to cost the economies of these countries some \$240 million.

There remained a need to fuse the ECLAC macroeconomics model with the models being used by the World Bank. Use of varying models could lead to different conclusions, and ultimately, confusion, when countries presented different estimates from what the World Bank economic models predicted.

At present, ECLAC was trying to add a prescriptive aspect to the economic model to generate dynamism. It should be recognized, however, that the new fusion of models for developing countries would be deficient in social distribution aspects (since such data was seldom available to the degree of accuracy needed); ultimately, the availability of data would determine how far the models could be used. Thus it was necessary to point out beforehand at training sessions, the conditions under which the model would operate, identify the fact that the econometric models did not take certain situations in developing countries into account and request the assistance of academics to provide more robust and usable models.

Various issues raised during the workshop

Overall, the revision of the training manual should be case study driven, therefore the number of case studies and examples should be expanded considerably. In addition to the current case studies, examples from the health sector such as those relating to the health impact of *El Nino*, which saw increases in malaria, dengue and Chagas disease, would be instructive. Also, Central America estimated the impact of drought on seasonal crops by estimating crop production in the absence of drought conditions, and comparing that estimate with real production to determine the difference and the impact of drought. The estimate was prepared based on good data on market prices. There were also studies on increased costs due to bad roads. At present there was a simulation exercise for a storm hitting the Mexican coast, as well as one for Belize and an exercise on assessing the impact of rains and storms on Haiti’s agricultural sector. In addition, case studies from other geographical areas would be an asset, such as studies from the Philippines or India or the SARS example from Singapore. If actual examples were lacking, theoretical cases could be developed and used until such time that examples became available.

It was felt that ECLAC should be looking towards a module-based training manual rather than the more static form that presently existed - one that would be flexible in thematic areas as well as in case study selection. There should be and there is a move afoot to build partnerships with intergovernmental organizations, universities and the World Bank.

Other suggestions related to improvements in delivery of training were:

- Training materials would be grouped in two sections, one which dealt with the methodology and one concerned with case studies. A modular format should be applied.
- There should be an e-link available which should lead a person to all documentation on natural disasters.
- Old disaster reports should be made available on the ECLAC website, to allow comparison between years.

Work carried by other organizations, using the ECLAC methodology, should also be included on the ECLAC website.

It was assumed that the Subregional Headquarters of ECLAC in the Caribbean would be responsible for training its staff and associate organizations in Trinidad and Tobago and the wider Caribbean, and the use of link ups with Santiago and Mexico via video conferencing and other technological aids would be used to facilitate this effort. More in-depth training of UWI, ECLAC and ACS staff should take place.

Relating the effects of disasters on growth, equity and gender aspects must be taken into consideration. It was no longer enough to trace macroeconomic effects, as often gender was negatively affected, in general, and disasters affected equity causing further hardship to the poor, who were the most vulnerable from the outset.

It was necessary to strengthen collaboration with other institutions which were also working on disaster assessment and alleviation. Thus, in the Caribbean, the Caribbean Development Bank (CDB), CDERA, UWI, UNDP and the Organisation of American States (OAS) should be considered as potential partners for future collaboration.

The task ahead

There was agreement that training in the ECLAC disaster assessment methodology should become an increasingly important aspect of ECLAC's activities in disasters. Such training would primarily focus on Latin America and the Caribbean but would also be extended to other regions and other institutions such as the World Bank or ESCAP. With this in mind the participants recognized the need for strengthening the collaborative efforts among the various offices and divisions of ECLAC. The participants also agreed that the current training manual should be deepened.

Elements of the task ahead are outlined below. Indications of the responsible office will be between brackets

Electronic access

Currently, the main ECLAC web page did not point to disaster-related documents. Finding them was far from intuitive, as the currently available reports were spread over the sites of the subregional offices. This issue could be addressed by making reference to disasters on the ECLAC main page, while the actual storage of documents could remain within the respective sub-offices. (ECLAC Mexico to approach the web page committee in Santiago)

ECLAC has carried out many disaster assessments. Past disaster reports and assessments should be made available in digital form and older reports may have to be digitized. (ECLAC Mexico, a few documents by ECLAC Port of Spain)

One common website, collecting all disaster related reports under one umbrella (a virtual ‘disaster document library’), should be created. (ECLAC Mexico/ECLAC Port of Spain)

An internal disaster web page similar to the one ECLAC has developed for the ECLAC–IDB project should be created. Such a web page would also be used to share notes and messages and work in progress (ECLAC, Mexico)

It was also deemed important to explore partnerships, such as with the World Bank, to prepare courses for distance learning.

Funding

There were limited funds to carry out the scheduled activities. The following was suggested to improve the situation:

- Explore funding possibilities within existing partnership agreements (ECLAC Mexico)
- Set in motion, by 31 August 2004, a project outline and project to prepare case studies for inclusion in the training manual and to “modularize” the training manual (ECLAC Port of Spain)

The training manual

Ultimately a new “training manual” will emerge, as a dynamic, flexible, module based tool that will be multi-purpose, multi-media and available for use by all ECLAC offices. Consistent and homogenous in terminology and concepts, it would provide different possibilities for training so it can be adapted to particular training needs. Thus, the existing section on definitions of important terminology will be strengthened and coordinated and there will be an increased number of case studies, examples and exercises. Thus the need to prepare flexible training modules with a range of case studies and in depth exercises so that suitable training materials can be drawn upon depending on the audience.

Some specific topics agreed on are:

- There is a need to indicate upfront the definitions of important terminology as used in the manual and as used in the methodology.
- Increase the number of case studies, examples and exercises.
- Consider the more extensive use of maps (in particular) and satellite imagery to assist in the assessment.
- Begin work on assessing damages to cultural heritage.
- Prepare flexible training modules with a range of case studies and in-depth exercises so that suitable training materials can be drawn upon depending on the audience.
- Revise the section on environment (ECLAC Port of Spain, ECLAC Santiago, consultant)

Ultimately, "training manual" would emerge, which would be based on a flexible and modular approach. The "manual" will provide different possibilities for training as it would be able to adapt to particular training needs.

Other

- Carry out an in-depth training course for staff at ECLAC Port of Spain, the ACS and other international agencies based in Trinidad and Tobago (ECLAC Port of Spain)
- Pursue the incorporation of the Social Vulnerability Index in the assessment procedures (ECLAC Port of Spain)
- Convene a progress workshop, tentatively scheduled for October/November in Mexico.
- Link the task ahead with ECLAC efforts, such as the work in the sustainable development division and the Latin American and Caribbean Institute for Economic and Social Planning (ILPES), the social units – in particular the social vulnerability index -, the MDGs and participation in the forthcoming disaster meeting in Kobe.

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Annex 3**WORKSHOP ON DISASTER VALUATION****Programme****Tuesday 6 July 2004 (9 a.m. - 4 p.m.)**

1. Opening of workshop. Overall discussion of the present updated ECLAC methodology's contents and recent applications. (*R. Buitelaar and R. Zapata*)
2. Presentation of the Caribbean office training manual in its present form. (*E. Blommestein*)
3. Recent training materials prepared by ECLAC for seminars, courses and virtual learning developments with ESCAP, the World Bank and national and regional institutions (such as CEPREDENAC in Central America, CENAPRED in Mexico, NEMO in Belize, NDCC in the Philippines). (*R. Zapata and R. Hernandez*).

Coffee break

4. Exercises developed for training purposes in different contexts. (*R. Jovel and R. Zapata*)
5. Discussion on issues of coherence, terminology and conceptual harmonisation between the methodology and training materials. (*All participants, Moderator: R. Zapata*)
 - a. The basic conceptualization of the risk formula as a function of hazard and vulnerability
 - b. The definition of primary, secondary and tertiary impact on affected population
 - c. The basic stock-flow model (direct /indirect damage)
 - d. The damage gap or delta

Lunch

6. Continued discussion on overall or global implications of disasters. (*All participants, Moderators: R. Jovel and R. Hernández*)
 - a. Summation of direct and indirect effects (comparability between sectors, coverage and non-duplication of impact and losses; relative value of these in the context of significant variables and pre-disaster conditions and dynamics)
 - b. In macroeconomic terms (the present static or casuistic assessment and alternative scenarios and the need for a dynamic assessment of the cumulative impact of disasters in unstable equilibrium situations)
7. The cross-cutting aspects not reflected in national account variables. (*All participants, Moderators: A. Kambon and J.J. Gómez*)
 - a. gender and other social aspects
 - b. environmental and sustainability considerations

Wednesday 7 July 2004 (9 a.m. - 4 p.m.)

8. Gaps in coverage as well as need to revise existing training materials. (*R. Zapata, R. Jovel, J.J. Gómez and D. Smith*)
 - a. agricultural assessment, with specific examples on permanent or multi-annual yielding crops and plantations, annual crops, and their classification as direct/indirect
 - b. environment aspects not covered and expand marine and non-marine impacts, e.g. flooding, landslides, emphasizing the cross-cutting nature of environmental impacts, including considerations of climate variability and change

Coffee break

8. Continuation. (*Moderator. A. Kambon, E. Blommestein*)
 - c. assessing damages for cultural heritage: direct and indirect and the use of indirect means to assess asset losses
 - d. The social sector indicators of vulnerability and the current indices being proposed internationally in terms of disaster risk, human development and social vulnerability
 - e. The special nature of the tourism sector in the context of Caribbean economies and on the national accounts in general.

Lunch

9. The standardization of current materials (in terms of language and content) and the inclusion of more extensive examples, exercises and case studies). (*Overall discussion. Moderator R. Zapata*)
10. Alternative formats for training materials.
11. Closing discussion: The task ahead. (*Moderator R. Zapata*)
 - a. The preparation of one or several training manuals vs. the preparation of flexible training modules, adaptable to specific needs
 - b. The publication (in paper or electronic medium) of such materials and the preparation of materials usable in distance learning courses
 - c. The availability and need of partners for the preparation and dissemination of these materials (in government, academia, regional and international organizations of the UN, international financial institutions)
 - d. The outreach to NGOs, professional associations and the private sector.
12. Closure. (*R. Buitelaar*)

Annex 4**TRAINING WORKSHOP ON DISASTER VALUATION****Programme**

Thursday 8 July 2004 (9 a.m. - 4 p.m.)

- 9.00. Introduction
1. Opening: *R. Buitelaar* (15 min.)
 2. Contents of workshop: *R. Zapata* (15 min.)
 3. General Introduction: *R. Jovel* (60 min.)
- 10:30 *Coffee break*
- 10.40 4. Sector-by-sector assessment of damage and losses
- a. Affected population and social sectors: *A. Kambon*. (20 min.)
 - b. Infrastructure
 - i. Basic services and lifelines: *R. Jovel* (water, energy, transport and communications) (30 min.)
 - ii. Infrastructure in coastal areas and the marine environment, implications for island economies: *D. Smith* (30 min.)
 - c. Economic sectors
 - i. Agriculture: *R. Zapata, R. Jovel* (15 min.)
 - ii. Industry and Commerce: *R. Hernández* (15 min.)
 - iii. Tourism: *E. Blommestein* (15 min.)
- 12:45 *Lunch*
- 13.15 5. Summation of damages: *R. Jovel* (20 min.)
6. Overall implications
- d. Macroeconomic effects: *R. Hernández* (15 min.)
 - e. Gender and other social cross cutting issues: *A. Kambon* (15 min.)
 - f. Environmental impact: *JJ. Gómez, E. Blommestein, D. Smith* (15 min.)
7. Evaluation as a tool for reconstruction, disaster reduction and risk management. Open discussion, *Moderator: R. Zapata* (approx. 1 hour)
- 16:00 Closure: *R. Buitelaar*