4. Recurrent Themes and Concerns

This section reports findings from three working groups convened as part of the workshop and from more general discussions revolving around both the working group findings and the more formal presentations. The discussions focused primarily on efforts to improve post-disaster damage assessments of the impact of disasters and were largely concerned with assessment of the economic impacts of sudden-onset rather than slow-onset disasters, such as drought or pest outbreaks.

The three working groups considered the assessment of damage to the productive sector, to general infrastructure and basic services and to the social sectors respectively. The groups drew on two source materials: the ECLAC handbook and a World Survey of Damage Questionnaire which the International Decade for Natural Disaster Reduction Secretariat (Geneva) has recently field-tested in three countries.

As an overall principle, it was agreed that **post-disaster damage assessments need to be timely, reliable, appropriate, technically consistent and universally consistent**. Moreover, the methodology employed should not place an undue burden on national governments and should be realistic about the types of data which can reasonably be collected.

- **Limitations of current practices**
  Certain limitations of current practices were noted. **Existing efforts to assess the impacts of disasters are often concerned primarily with relief needs and do not constitute economic assessments of the impact of a disaster**. Poor assessment practices also imply that there is scope for exaggerating or down-playing the scale of a disaster, for example, for various political motivations or to secure additional assistance. Meanwhile, if damage assessments are initially conducted at a local level and then gradually aggregated as they are passed up through various tiers of government to the national level, there is some possibility that figures may be modified as they move through the system.

- **Definitional issues**
  There was considerable discussion about the distinction between direct (stock) and indirect (flow) impacts of disasters. **It was agreed that it would be more accurate to refer to stock and flow, rather than direct and indirect,**

impacts, as is currently the case. However, even then, stock losses can be valued in terms of lost output - that is, in flow terms - blurring the distinction between direct and indirect losses. It was also noted that direct and indirect costs should not be added as this could cause considerable double-counting.

Despite these difficulties, the distinction between direct (stock) and indirect (flow) losses remains a useful methodological tool, reflecting different stages of a post-disaster assessment. Direct impacts essentially relate to the direct physical impact of a disaster as measured through direct observation in volume, rather than value terms, during the initial assessment undertaken in the immediate aftermath of a disaster. For example, they are reported in terms of the number of houses and other buildings destroyed, the acreage of crops lost and so forth. They also include all relief costs, including the provision of temporary housing and relief supplies and temporary reinforcement of structural mitigation measures, such as dykes. In contrast, indirect costs are measured in value terms, for example, the value of the lost flow of income arising as a consequence of crop losses. Moreover, since direct impacts are not measured in value terms and direct and indirect costs are not aggregated, potential problems of double-counting do not arise.

- **The post-disaster assessment process**

  It was proposed that the assessment process should be undertaken in two phases. It was agreed that the **initial assessment** should be straightforward enough to be rapidly undertaken by 'foot soldiers', that is, by local people in the disaster-affected area, whether in an official or voluntary capacity. It should focus on short-term relief needs although, in order to permit a timely and appropriate response, it should also begin to identify potential indirect impacts such as the effect of food shortages on prices or rehabilitation efforts which need to be begun immediately, such as the re-planting of crops. **All estimates of the scale of damage should be measured in physical, rather than value, terms.** The initial survey could include information on whether buildings, infrastructure and so forth are partly or totally destroyed, the types of building destroyed, and the construction materials which had been used. Existing guidelines on how to assess the extent of damage to individual buildings and infrastructure as already provided in the ECLAC manual (ECLAC, 1991) could be drawn upon in undertaking the survey.

  Average figures on data such as the number of people per household or the size of houses could also be developed on a country-by-country basis to speed assessment. Thus, for example, assessors would only need to count the number of houses damaged rather than differentiating between houses with varying numbers of room in assessing the approximate scale of damage and rehabilitation needs.

Data could be verified through the use of ariel photography and satellite imagery, with perhaps some additional expert input in the case of more severe disasters. NGOs could also provide support to local communities in undertaking the initial physical damage assessment, perhaps having already received relevant training themselves.

This approach would help ensure a *participatory approach*, involving the local community in the assessment process - a potentially critical factor in the design of appropriate relief, rehabilitation and reconstruction efforts. In addition, it would reduce the cost of the assessment process by involving fewer external, and sometimes expatriate, experts. However, it should also be recognised that some communities are better placed than others to undertake preliminary damage assessments, depending on standards of education. Thus, greater external involvement may be required in certain communities.

Data should then be passed directly on to a national focal point responsible both for collating physical damage assessment reports and attaching financial values to the physical losses. Staff would be provided with appropriate training while economists would be responsible for estimating the economic cost of a disaster. Other groups collecting data should also be encouraged to pass their information onto the national government disaster focal point. Currently, for example, local NGOs (or local representatives of national or international NGOs) sometimes collect data but do not appreciate that others might be interested in it and therefore only use it for their own purposes.

A **follow-up survey** should then be done perhaps 6-8 weeks later, undertaken by an expert team comprised of people with relevant expertise, for example, engineers and agronomists. However, as is currently the case, it should be recognised that in reality specialist assessment teams are only likely to be provided in the event of major disasters. Data on the scale of damage of smaller disasters is less likely to be verified and so could ultimately be more inaccurate.

Ultimately, government policy and planning departments should become involved in the assessment process to help ensure greater consideration of hazard risks and vulnerability in the development planning and policy design process. However, it was recognised that this would entail certain changes in the institutional arrangements for disaster-related activities which currently exist in many countries. In the shorter-term, efforts should therefore be focused on improving assessment capacity within government disaster relief agencies.

- **Questionnaires versus checklists**
  The relative merits of the use of questionnaires or checklists in undertaking initial physical damage assessments were discussed. Data collected with the assistance of the latter may be less consistent but checklists can be much simpler to complete. It was therefore proposed that the **initial assessment should be undertaken using a checklist while a questionnaire should be used for the follow-up assessment**. Standard questionnaires and checklists should be developed and field-tested for use worldwide. It was agreed that separate checklists and questionnaires would be required for different types of natural hazards, such as floods, earthquakes, cyclones, droughts, volcanic eruptions, fires and technological hazards.

- **Valuation of disaster impacts**
  The correct methodology for attaching monetary values to the direct impacts of disasters was debated at length. The physical impacts of a disaster can be translated into monetary terms at either their replacement or present value.[1] In deciding the appropriate pricing basis it was recognised that it is important to bear the objective of the valuation in mind. **If the cost of physical damage is being estimated for programming purposes** - that is, as a basis for calculating the cost of the required reconstruction and rehabilitation effort - **the reconstruction cost is the appropriate pricing basis**. Such estimates increasingly tend to include the cost of the improvement of infrastructure and other assets to contemporary standards and possibly their reinforcement against future disasters. However expenses relating to an expansion in size of a facility - for example, the replacement of an 80-bed hospital with a 100-bed one - should not be taken into account as part of the replacement cost. Meanwhile, lost crops should be valued at market prices prevailing prior to the disaster rather than at potentially inflated post-disaster levels.

  In contrast, **if the economic cost of a disaster is being estimated - as, for example, required for use in the cost-benefit analysis of disaster prevention, mitigation or preparedness projects - present values should be used**. Thus, the economic and physical damage losses of disasters are likely to differ, with the latter typically higher than the former. Cost-benefit analyses should also take account of potential increases in the scale of damage resulting as a

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1 The present value is the discounted sum of all future receipts of income derived from an asset, defined as $1/(1 + d)^t$ where 100 d is the percentage rate of discount and t is the number of years ahead. This process of discounting thus revalues all receipts of income occurring at various points in the future in current prices, permitting their summation and comparison.

consequence of a disaster over time, reflecting possible increases in investment, greater environmental degradation and so forth.

It was also agreed that no attempt should be made to attach values to the loss of buildings of historical or cultural significance beyond that of either their replacement value or loss of future streams of income since such valuations are subjective whilst the loss is irreplaceable. Similarly, no attempt should be made to value loss of human lives because such estimations can be the source of much controversy, entailing as they do not only the loss of potential productivity but also more qualitative factors. Even the valuation of lives in the strictest sense of loss of output or earnings can create difficulties where inter-country comparisons are being made, reflecting differences in wage and pricing structures.

- **Standard pricing lists**

  It was proposed that standard pricing lists should be pre-prepared in disaster-prone countries **to ensure a rapid valuation of the cost of physical damage and reconstruction costs in the aftermath of a disaster**. Much of the relevant data is already available with various government agencies - for example, the cost of constructing schools of varying size and materials or various types of road - and could be updated annually by the national government disaster focal point. Moreover, two parallel lists could be drawn up, facilitating estimation of both the replacement cost and the present value of the damage resulting from a disaster.

- **Timeliness**

  The speed of the initial assessment is critical in order to provide appropriate and timely relief efforts and, if necessary, to facilitate the preparation of international appeals. To ensure an accurate assessment of damage it was agreed that the assessments also need to be undertaken before any relief and rehabilitation efforts or self-help initiatives are begun. However, there was less consensus on the speed with which indirect costs should be assessed. Some felt one month was a reasonable interval; others that this represented too short a period.

- **Relief costs**

  All relief expenditure should be included in the estimation of the cost of a disaster. Such expenses may entail the cost of clean-up operations, provision of temporary bridges or housing, search operations, provision of food and clothing and so on. Relief expenditure costings should also include the sometimes substantial opportunity cost of the temporary reassignment of government and other employees as well as the armed forces to assist in a relief operation.

There are certain reporting difficulties relating to the fact that the difference between relief and rehabilitation and reconstruction costs is not always entirely clear-cut. ECLAC, for example, therefore defines all expenditures incurred in the first month immediately succeeding a disaster as relief costs and all subsequent expenditures as rehabilitation and reconstruction costs.

- **Broader scope of post-disaster damage assessments**
  In addition to assessing physical damage, post-disaster assessments should consider other factors which can also play some role in determining the economic impact of a disaster, local coping capacity and the most appropriate forms of assistance. For example, they should consider factors relating to labour productivity such as disaster-related out-migration and the implications of a disaster, including its gender dimensions, for the division of labour. In addition, assessments should take into account damage experienced by more marginal groups of society. Damage to subsistence crops as well as of the direct and indirect losses to marketed production should also be taken into consideration. More generally, the social, political and cultural context of a disaster should also be taken into account.

  It was also proposed that damage assessments should include information on functioning infrastructure, assets and resources remaining in a disaster-affected area. Such information would provide some indication of coping capacity, the scope for self-help initiatives, the most appropriate forms of assistance and the opportunities for drawing on the local resources and skills in the relief and rehabilitation efforts.

- **Secondary impacts**
  It was agreed that the **secondary impacts of disasters need to be assessed by trained economists some months after the disaster.** The precise timing of such assessments would depend partly on the timing of a disaster relative to the financial and calendar year and thus to the timing of estimates of annual economic performance. It was also recognised that it was important to undertake 'with-without' rather than 'before-after' analysis in measuring the indirect and secondary impacts of a disaster - that is, to compare actual economic performance with projected performance had the disaster not occurred - as natural disasters are not the only factors determining economic performance.

- **Reporting procedures**
  Information on the **damage incurred as a consequence of a disaster should be presented in a disaggregated form** for use by governments, donors and NGOs in designing appropriate packages of assistance. The importance of reporting

relief and reconstruction costs explicitly was also acknowledged as certain donors are sometimes unwilling to finance preparedness or mitigation measures or even reconstruction costs in responding to a particular disaster appeal.

- **Revision of previous estimates**
  It should be more widely accepted that initial estimates of the cost of a disaster are likely to be revised as more thorough assessments are completed. In the immediate aftermath of a disaster considerable pressure is often exerted, in particular by the media, on local and national government officials, the insurance industry and even NGOs to provide immediate estimates of the scale of damage. These 'back-of-the-envelope' calculations can later prove very difficult to revise, in part because an initial estimation may be re-quoted so many times that the original source is lost and the figures become to accrue some credibility simply through their constant repetition and thus apparent reinforcement of their accuracy.

- **Assessment of the historical impact of disasters**
  The potential benefits of reviewing and, where necessary, revising estimates of the economic impacts of historical disasters was discussed. Governments are currently making disaster prevention, mitigation and preparedness investment decisions on the basis of incomplete data which underestimate the cost of disasters. **Improved data would help inform investment and policy decisions** and thus help secure more appropriate levels and forms of disaster prevention, mitigation and preparedness. Historical studies could also be undertaken to inform the development of appropriate methodologies for the assessment of future disasters

5. Conclusion and Recommendations

Statement by Dr. Debarati Guha-Sapir
(Université Catholique de Louvain - Brussels)

The workshop has now come to a close after two days of productive and insightful discussions. Many new ideas and methodologies were shared and debated. Three principal recommendations came out of this consultation that should be taken into account in assessing the economic impact of natural and man-made disasters:

First, data on economic impact is crucial in many respects, principally as key information for policy development on national and regional levels for development planning but also for research on alternative approaches to disaster impact reduction.

Second, providing **valid, accurate and comparable data comparable over time and across regions, a clear definition and methodology for estimating cost of damage due to disasters is essential.**

Third, standard recording procedures should be developed and promoted by appropriate development agencies such as the UNDP or those with disaster mitigation responsibilities such as International Federation of Red Cross or UN Department of Humanitarian Affairs.

This workshop was undertaken under the sponsorship of the European Commission Humanitarian Office of the European Union, in particular the disaster preparedness programme. It reflects their interest in this issue and their concern to improve disaster preparedness planning within the key development sectors. We, as a research organisation, hope to follow-up this meeting with the development of a standard protocol for data collection and a method for interpreting the data based on the numerous excellent work presented here. With some more hard work, collaboration and a little luck, together we can perhaps achieve this goal in the near future.

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Workshop on
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Workshop on
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29 September 1997

9.00-10.30	Welcome and Introductory Remarks Presentation of the participants (5/10 min. explaining recent work or interests relevant to workshop topic)
10.30-11.00	Coffee break
11.00-13.00	Direct/Indirect losses. Market/Non market losses. Realistic option for data collection. Presentation and discussion.
13.00-14.00	Lunch
14.00-15.00	Comparative Methodologies : Presentation and discussion Mr. Ricardo Zapata-Marti (Cepal-Mexico)
15.00-15.30	Coffee break
15.30-16.30	Experience from the field : Presentation and discussion Gil Alonsagay (Asian Social Institute- Manilla)
16.30-17.00	Working group topics (discussion will include the type of data to collect and simple methodology to collect them) Group 1: Assessment of damages to infrastructure (roads, bridges, dams ...) Group 2: Assessment of damages to agriculture (crops, livestock) Group 3: Assessment of damages to properties/Clean - up costs
17.00-19.00	Discussion in three groups
20.00	Dinner

30 September 1997

9.00-11.30	Discussion in three groups
11.30-13.00	Presentation of groups work
13.00-14.00	Lunch
14.00-18.00	Discussion of group result
18.00-18.30	Concluding remarks