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Rapid Post-Disaster Community Needs Assessment: A Case Study of Guatemala After the Civil Strife of 1979–1983

RICHARD A. MARGOLUIS, ROBERT R. FRANKLIN, WILLIAM F. BERTREND and THOMAS A. SELLERS

Disaster assessment and assistance activities are often hampered by organizational problems which diminish the effect of these efforts on the people they are intended to help. Inefficient targeting of relief causes reduced coverage of needy populations and inflated costs. In order to ensure that the most needy populations receive appropriate types and amounts of assistance, collection of assessment data must be at the lowest possible administrative unit. In addition, it is essential that disaster assessment be a dynamic process in which follow-up activities monitor possible changes in vulnerability and need in the targeted populations.

This paper presents a method for post-disaster rapid needs assessment at the community level. Indigenous numerators are used to collect data with which communities are served and ranked according to need. Qualitative and quantitative methods are incorporated to provide rapidly a centralised database with which relief organizations can accurately target specific communities for assistance.

INTRODUCTION

Disaster assessment and assistance efforts are troubled by logistical and organizational problems which often hinder effective and efficient delivery of needed resources to target populations. Foremost among these problems are: 1) assessment based solely on subjective observational techniques, without incorporation of objective quantitative procedures (Lechat and DeWals, 1981); 2) simultaneous involvement of many private and governmental organizations in assessment activities, using teams of foreign specialists unfamiliar with local conditions (Bates, 1982); 3) lack of standardization of assessment techniques, which results in little comparative data among disasters and among organizations responding to them (Seaman, 1984); 4) lack of communication and the sharing of assessment results between involved organizations, especially between ‘data-providers’ (i.e. assessors) and ‘data-users’ (i.e. relief organizations) (Noel, 1981); 5) frequent use of ‘one shot’ initial assessment techniques early in the post-disaster period, with little attention paid to follow-up information collection activities (Rhode, 1979); 6) assessment activities carried out regionally rather than at individual community levels (Tabor, 1983); 7) failure to take into account pre-disaster conditions (Farrell and Bates, 1982); and 8) delays in information compilation and report writing, resulting in availability of findings only after the emergency period has long passed (Tabor, 1983).
The resulting situation is usually predictable. The information collected does not identify accurately either the populations in greatest need, or the relative amounts of relief assistance required. The various private and public relief organizations, with little knowledge of each other's operations, tend to overlap in their assessment areas and resource delivery activities. The lack of standardized methods of needs assessment contributes to the breakdown in inter-organizational communication and cooperation, which are inadequate at the outset. Foreign disaster specialists are often unable to understand fully the cultural and social implications of a disaster event. Without the initiation of assessment and follow-up evaluation activities at the community level, the ability to target the most affected populations is severely impaired. Likewise, failure to consider pre-disaster conditions prevents an objective appraisal of needs attributable specifically to the disaster event.

In order to improve disaster assessment efforts, it is essential to find the proper balance between purely subjective observational techniques and objective analytical ones. Needs appraisal models are required in which collection of data is rapid, and the analysis of data is quick and direct. Incorporation of direct observational information and only a few hand-calculator generated indicators would provide sufficient data for a preliminary assessment of needs. Ideally, these data should be readily obtainable from a walk-through tour of the community, or brief discussions with affected community residents. As important as the assessment itself is the distribution of its findings to all agencies working in the area.

This paper will present a case study of a disaster relief project in Highland Guatemala which has addressed the above needs. A method for post-disaster rapid needs assessment at the community level will be discussed in which qualitative and quantitative methods are used. The project was designed to provide rapidly a centralized analytical and observational database with which relief organizations could target specific communities for assistance. The programme also supplied to resource providers logistical support in the form of the coordination of aid delivery along with monitoring of follow-up activities. First a brief introduction to the existing conditions in Guatemala at the time of the assessment will be presented, followed by a description of the assessment techniques used and a discussion of the findings and impacts of the study.

BACKGROUND

For many years, Guatemala has been plagued by civil unrest that has affected mostly the rural Indian populations of the highlands. Only recently did the violence reach such an extreme that it produced Guatemala's second major disaster in less than a decade. The first, an earthquake, killed approximately 23,000 and injured close to 76,000 people on 4 February 1976 (Glass et al., 1977). Almost immediately following the earthquake, the guerrilla movement which had been relatively dormant for many years, suddenly gained momentum. Guerrilla and counter-insurgency warfare peaked in 1980–83, causing a high level of mortality and destruction, and forcing the displacement of many highland residents from their communities into the surrounding countryside and neighbouring Mexico (Figure 1).

It is widely believed that the earthquake of 1976, although maybe not directly responsible for the civil war, served as a catalyst to bring it about (Cuny, 1983). The combination of the lasting effects of the earthquake and the civil violence produced a crisis in the highlands that required immediate attention. Although an early 1982 document reported the critical state of
affairs in the countryside and the need for assistance (Wheeler, 1982), the problem was not publicized widely either domestically or internationally until July of 1983 when field investigations were initiated for the rapid needs assessment described in this study (Sellers and Margoluis, 1983).

It has been estimated that the civil war created a higher level of mortality than the 1976 earthquake (Krueger and Enge, 1985). Morbidity rates attributable to the indirect result of displacement and infrastructure disintegration were estimated to be high, although no exact figures were available. The following is a list of reported impacts which were concentrated in the central highlands (ibid.):

- 50 to 75 thousand persons killed or disappeared
- 440 villages destroyed
- several hundred thousand people displaced for periods of several months to three years and more

In 1982, a preliminary visit to the war-torn northern zone of the department of Chimaltenango revealed that it was virtually uninhabited. During the week of travel in an area once populated by approximately 40,000, only about twenty people were seen. By May of the same year many residents had begun to return to their villages only to find their crops and homes destroyed, and no available medical services. Newly arriving residents were faced with the prospect of having to wait at least one full harvest cycle (nine months) before they could secure any food.

Three general conclusions were reached at this point, which guided the subsequent project through the development phase: 1)
a very large portion of the highlands was affected, but very few outside agencies or individuals knew the extent; 2) there were no assessment, coordination of resource delivery, monitoring or evaluation activities in the zone; and 3) the little resource delivery that was taking place in the area was being conducted in an inadequate and inefficient manner.

The study zone was defined as the northern half of the department of Chimaltenango (Figure 1) and included the municipalities of Patzun, Tecpán, Santa Apolonia, San Jose Poaquil, Zaragoza, Comalapa, and San Martin Jilotepeque. The departments of Guatemala are equivalent to states and are divided into municipalities. Each municipality contains a number of communities, which its officials represent at the departmental level.

METHODS

An information-base was needed to begin selecting appropriate indicators for assessment. A series of exploratory guided and informal interviews was performed with representatives of non-government organizations (NGOs), government agencies, and other concerned organizations. Preliminary information was gathered on: areas most affected, approximate number of people affected within each area, and anticipated type of effect and type and quantity of needs. In addition, the above individuals were consulted as to what information they and their organizations desired in order to provide appropriate assistance to the communities.

FIELD TEAM ORGANIZATION

In July 1983, a series of field visits was conducted to determine what type of information would be easily obtainable, and at what level it should be collected. Instruments for rapid needs assessment that collected data at the community-level were then developed, based on information from the exploratory interviews and the field visits. The following month, a field team of bilingual (Spanish and Cakchiquel) interviewers was selected and trained. All team members were Cakchiquel Indians; this group comprised approximately 90% of the population of the target zone. The use of local interviewers instilled confidence and trust in the highland Indian population. In addition, they played an integral role in deciding how and which questions should be asked, and they were frequently consulted as to the appropriateness of the methodology and instrument design. The principal author was responsible for the supervision of the field team, and a local administrator managed the central office. The survey instruments were revised and refined during the two-week training session, after which they were pre-tested in nine communities.

INSTRUMENTS FOR ASSESSMENT

Initially, two instruments were designed: an Observational Checklist and a Complete Key Informant Questionnaire. After the pre-test, a third instrument was added: the Preliminary Key Informant Questionnaire. All instruments were constructed to be utilized at the community level.

The Observational Checklist furnished the interviewer with the opportunity to document rapidly his initial impressions of the community to be assessed, in a semi-quantitative and standardized manner. This instrument was completed by the interviewer without personal contact with community representatives and was based solely on his visual inspection.

The Preliminary Key Informant Questionnaire was developed to screen communities in order to select only those villages that were affected by the violence for further data collection. This questionnaire was the principal assessment
instrument, as it provided the data necessary to score and rank communities according to their level of need. The Complete Key-Informant Questionnaire was used to acquire specific, in-depth community level data for analysis. Like the Observational Checklist, its role was to supplement the Preliminary Key Informant Questionnaire with information that would be crucial to planning the delivery of appropriate assistance to those communities most affected by the violence. Figure 2 illustrates the function each instrument serves in the assessment procedure. Each of the three data collection instruments will be examined in detail below.

The Observational Checklist
The Observational Checklist was the first instrument to be filled in by the interviewer as he entered a community and was divided into sections on: 1) accessibility; 2) agriculture; 3) community appearance; 4)
resident attributes; and 5) public services. The interviewer circled the appropriate number that corresponded to the observed community attribute. For example, in the section on accessibility, the interviewer recorded whether the road into the village was adequate for: 1) large truck; 2) pick-up truck; 3) motorcycle, or 4) access on foot only. In the section on public services, the interviewers noted whether or not various community structures (e.g. school, health post, and potable water system) were 1) functioning (at the time of the field visit); 2) not functioning, or 3) never present in the community.

The Preliminary Key Informant Questionnaire

The Preliminary Key Informant Questionnaire was developed after analysis of pre-test data and feedback from the field team indicated that a considerable amount of time was needlessly consumed administering the Complete Key Informant Questionnaire in communities that were not affected. The instrument was comprised of seven core questions from the more in-depth Complete Key Informant Questionnaire. From these questions, five indicators were calculated and used to score and rank the target communities on the basis of need. The schedule included questions to assess: 1) the percent of community attrition; 2) the percent of refugees and widows in the community; 3) the amount and duration of abandonment; 4) the quality of the last harvest, and 5) the amount of destruction attributable to the civil violence. For each indicator a conservative cut-off point was chosen (e.g. 10% or more of the community comprised of refugees or 20% or more community displacement) based on the pre-test analysis, recommendations of disaster relief and development experts, and perceptions of the field team. If any indicator was above the designated cut-off point, this would demonstrate that the community was at least moderately affected by the violence, and the interviewer would proceed to administer the Complete Key Informant Questionnaire.

Key informants were chosen from among the following community leaders: mayors, civil patrol (paramilitary) commissioners, religious leaders, teachers and various community committee members. The selection of the community leaders to be interviewed as key informants was based upon availability on the day of the field visits and willingness to be interviewed. Given these selection criteria, a minimum of two key informant interviews were conducted for each village, but up to six could be conducted in an attempt to increase reliability. Interviews were performed privately, away from other community members.

The Complete Key Informant Questionnaire

Using the Complete Key Informant Questionnaire, information was gathered on community displacement and abandonment, infrastructure destruction, result of last harvest, the number of refugees, widows and orphans, presence of health promoters, distance to the nearest health post, previous relief assistance, and self-perceived needs. This instrument provided detailed village-level information that was compiled into community profile sheets. In addition, it supplied data which were used to identify the type and quantity of aid required to assist most effectively those communities that demonstrated the greatest levels of need.

Time spent in each community was kept to a minimum. The Observational Checklist was completed usually in two minutes, the Preliminary Key Informant Questionnaire in five minutes, and each Complete Key Informant Questionnaire in ten minutes. The entire assessment process,
including time waiting for key informants, usually took no more than two hours for each community. When fully operational, the team usually divided into three groups of two interviewers. In this manner, each team could visit three or four villages daily; up to ten villages were covered by the team each day.

Informal and guided interviews were conducted by the field supervisor at the municipality level, in order to determine what areas were particularly affected. In this manner, assessment activities could be targeted further to avoid spending time on unaffected zones.

ANALYSIS OF THE DATA

Community Scoring and Ranking

The indicators that were collected using the Preliminary Key Informant Questionnaire were used to summarize the findings of the assessment activities. These indicators were calculated by hand and determined each evening after a day of data collection. The indicators used were: 1) outcome of 1983 (previous) harvest; 2) percent population displacement; 3) percent female heads of households; 4) duration of community abandonment; and 5) previous assistance. Based on analysis of the data from initial field visits and the pre-test and discussions with the field team, a weighting system was created to score and rank the target communities according to need. The weight of each indicator corresponded to its relative importance as determined by the pre-test (Table 1). Disaster and development experts who had been working in the Guatemalan highlands during the civil strife were

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Theoretical values or range</th>
<th>Actual values or range</th>
<th>Mean value</th>
<th>Relative weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome of 1983 Harvest</td>
<td>0, 25, 100*</td>
<td>0, 25, 100</td>
<td>50</td>
<td>12.5</td>
</tr>
<tr>
<td>Percent Female Heads of Household</td>
<td>0 to 100</td>
<td>0 to 63</td>
<td>19.4</td>
<td>4.9</td>
</tr>
<tr>
<td>Percent Population Displacement</td>
<td>0 to 99</td>
<td>0 to 83</td>
<td>17.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Duration of Abandonment</td>
<td>0 to 36*</td>
<td>0 to 28</td>
<td>4.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Previous Assistance</td>
<td>0, −15, −25*</td>
<td>0, −15, −25</td>
<td>14.7</td>
<td>3.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>−25 to 335</td>
<td>−3 to 239</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See section ‘Description of Indicators’ for explanation of values
TABLE 2
Example of Community Indicator and Composite Scores

<table>
<thead>
<tr>
<th>Community</th>
<th>% Displacement</th>
<th>Months Abandoned</th>
<th>1983 Harvest</th>
<th>% Widows</th>
<th>Previous Assistance</th>
<th>Composite Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chuabaj</td>
<td>64</td>
<td>28</td>
<td>100</td>
<td>47</td>
<td>0</td>
<td>239</td>
</tr>
<tr>
<td>Las Escobas</td>
<td>43</td>
<td>24</td>
<td>100</td>
<td>2</td>
<td>0</td>
<td>169</td>
</tr>
<tr>
<td>Tonajuyu</td>
<td>78</td>
<td>14</td>
<td>25</td>
<td>33</td>
<td>-15</td>
<td>137</td>
</tr>
<tr>
<td>Las Carretas</td>
<td>27</td>
<td>12</td>
<td>25</td>
<td>27</td>
<td>-15</td>
<td>76</td>
</tr>
</tbody>
</table>

consulted, to assist in the determination of the appropriate weights. The calculated values for the first four indicators were added together and the previous assistance indicator was subtracted from the total score. In this way, for each community a composite score was calculated that reflected its level of need; a high composite score corresponded with a higher level of need (Table 2).

Based on the pre-test results, a critical cut-off point of 120 was established for the community composite scores. Pre-test analysis demonstrated that those communities which the field team subjectively rated as seriously affected by the violence had scores of at least 120. In addition, that score seemed to be a natural point of division as few communities had scores between 100 and 120. A score above 120 demonstrated that the community was severely affected by the violence, was facing a crisis and should be targeted immediately for aid.

Results of the scoring and ranking of communities were compiled on zone summary sheets, which were made immediately available to organizations interested in providing relief assistance. Once a particular community was targeted for aid, the comprehensive data collected from the Complete Key Informant Questionnaire were used to facilitate the procurement and delivery of appropriate assistance. Below, a detailed discussion of each of the five scoring indicators will be presented.

Description of Indicators

1) Outcome of the 1983 harvest

- value = 100: no harvest in 1983
- 25: reduced harvest in 1983
- 0: self-perceived normal or near-normal harvest in 1983

This indicator was weighted comparatively the heaviest, as current food supply of a community was a direct function of its last corn harvest. In addition, residents of the target zone depended normally on sales of harvest surplus to enable them to purchase other necessities. This method of income generation immediately after the harvest allowed farmers to purchase food shortly before the next harvest when stores were particularly low. The most critical situation that some communities faced was the threat of starvation because of a lack of stored food or the means to procure it. Therefore, the outcome of the 1983 harvest was a strong indicator of immediate need. This indicator was weighted to reflect its relative importance. A score of 100 (no harvest in 1983) was sufficient to place the community composite score within twenty points of the cut-off; it is, therefore, the dominant indicator.
2) **Percent population displacement**

\[
\text{value} = 1 - \frac{\text{number of families at time of visit}}{\text{number of families before the violence}} \times 100
\]

The degree to which a community was displaced is a good indication of how much it was affected by the civil violence. Values for this indicator represent the percent of the community that no longer lived there because of the war (due to death or abandonment). In the Guatemalan highlands, there is a very important sense of community which is vital to the integrity of a village. The loss of residents not only affects adversely those who remain, but also, by itself, demonstrates that the community was at least moderately affected by the violence. A high value for this indicator added significantly to the community composite score, putting it near to the cut-off point. Its comparative weighting makes it second in importance after the outcome of the 1983 harvest indicator.

3) **Percent female heads of households**

\[
\text{value} = \frac{\text{number of widows in the community attributable to the violence}}{\text{number of families in the community}} \times 100
\]

The percent female heads of households provides a strong indication of need on two levels. First, it is an indirect measure of mortality through the estimation of adult male deaths. Second, it is a direct measure of the proportion of the community that is dependent on other villagers for support. Most widows could not care and provide for their children simultaneously. Like percent displacement, this indicator could provide an equally substantial amount of points to the community composite score. For this reason, percent female heads of households is approximately equal in relative weighting to the percent population displacement indicator.

4) **Duration of community abandonment**

\[
\text{value} = \text{number of months abandoned}
\]

It was found that the residents of communities which were not abandoned could still purchase some food from local markets, and continue to collect wild foods. In addition, those that were forced to abandon, often returned to find their fields overgrown and their homes in ruin. The level of this disintegration was directly proportional to the length of time the community was abandoned. The comparative weighting of this indicator is less than the previous three, as it had a maximum score of 36 months.

5) **Previous Assistance**

\[
\begin{align*}
\text{value} &= -25: 2 \text{ or more organizations have aided the community within the last year} \\
&= -15: 1 \text{ organization has aided the community within the last year} \\
&= 0: \text{no organization has aided the community within the last year}
\end{align*}
\]

Communities which received external support found it somewhat easier to cope with the hardships caused by the violence than those that did not. However, many villages that received previous assistance did not obtain appropriate types or adequate quantities of aid. Therefore, scores for this indicator were weighted relatively low.

**Composite Scores**

The calculation of community composite scores provided the means to rank the
villages according to their level of demonstrated need. In this way, priorities for assistance delivery could be established. To support the methodology and selection and weighting of the indicators, reliability checks were conducted nightly. Each evening after fieldwork, the interviewers met as a group and discussed their perceptions of the communities that were visited during the day. Subsequently, they would subjectively rank the villages by level of need. Although not tested in an independent manner, the qualitative and quantitative methods were always found to give comparable results.

RESULTS

During the assessment exercise, 187 villages were visited. Of these, 112 (59.9%) were at least moderately affected by the violence, as demonstrated by analysis of the Preliminary Key Informant Questionnaire. After Complete Key Informant Questionnaires were administered in these communities, it was found that 31 (27.7% of the affected communities) had community composite scores above the 120 cut-off point. These villages were targeted for immediate relief.

Communities that scored below the cut-off were targeted according to the availability of resources.

The municipality of San Martin Jilotepeque was the hardest hit area of the study zone. It accounted for 66 (58.9%) of the total number of communities that were affected by the violence, and 688 (54.0%) of all the widows in the area.

According to the self-perceived community needs expressed by the key informants, food was the primary need in 56 (50.5% of valid cases) of the 112 affected villages. Among those 31 communities which had composite scores above the 120 cut-off point, 24 (77.4%) listed food as their most urgent need. Fertilizer and housing, considered second in importance only to food, were reported by village leaders as the primary requirement for 23 (20.7%) of the 112 affected communities and 6 (19.4%) of the 31 above the 120 cut-off communities. A variety of lower priority items such as clothing, potable water systems, and school supplies were expressed as primary self-perceived needs in 32 (28.8%) of the affected villages, and in only 1 of above the 120 cut-off communities (Table 3).

Final summary reports of each

<table>
<thead>
<tr>
<th>Community Composite Score</th>
<th>Food</th>
<th>Fertilizer or Housing</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>120+</td>
<td>24</td>
<td>6</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>60−119</td>
<td>15</td>
<td>5</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>−5−59</td>
<td>17</td>
<td>12</td>
<td>29</td>
<td>58</td>
</tr>
<tr>
<td>TOTAL</td>
<td>56</td>
<td>23</td>
<td>33</td>
<td>112</td>
</tr>
</tbody>
</table>

Total number of communities = 112

$X^2 = 28.38 \quad p = 0.00$
municipality and individual community profiles were available within one day of completion of assessment activities in that zone. These reports were then disseminated immediately to organizations that were interested in supplying assistance. After the initial assessment, the field team returned to those communities that were to be targeted for aid to plan the delivery of appropriate assistance.

All of the villages that had composite scores above the cut-off point received assistance based on the community needs expressed by the key informants. Generally, three types of aid were delivered: staple foods (maize and beans), fertilizer, and building materials for housing (mostly corrugated tin for roofing). In some cases, food assistance was targeted to widows and their children, as it was felt by community leaders and the field team that they were the most vulnerable.

Without exception, community leaders whose villages were targeted for aid expressed the desire to pay for the assistance they received. Although they would not have any cash until their next harvest, they wanted the aid to be considered a loan of sorts. Food-for-work type programmes were established where village leaders would determine an acceptable price for the aid they were to receive, and decide on a community project that would, in effect, be payment for the assistance. The field team and community leaders would draw-up an informal contract outlining the project that was to be completed in exchange for the aid. Most villages elected to rebuild public structures (such as schools or cooperatives) or clear out overgrown dirt roads to their communities that became impassable during the violence. As the residents of the Guatemalan highlands are very hard-working, in many cases, the villagers would complete much more work than the informal contract had required of them.

Periodically, the field team visited all the communities that had community composite scores above the 120 cut-off point and which received aid. Through informal and guided interviewing it was determined whether or not the villages were receiving the agreed upon type and quantity of aid and were working on their community projects. In addition, the field team would note any changes in the community that would require special attention (e.g. a sudden influx of refugees or widows). These follow-up visits served as a means of monitoring and periodic re-evaluation.

DISCUSSION

At present, disaster assessment and assistance activities are hampered by organizational problems which diminish the effect of these efforts on the people they are intended to help. Inefficient targeting for relief causes reduced coverage of needy populations and inflated costs.

The advantages of the methodologies developed in the Guatemalan highlands are many. By integrating qualitative and quantitative assessment techniques, an equilibrium between speed and detail of data collection can be maintained. The assessment procedure is relatively simple and inexpensive and can be completed quite quickly; it also provides an objective analytical approach to disaster evaluation. Traditional large in-depth cross-sectional surveys using probability sampling techniques usually take several months to develop, administer, and analyze, and are universally criticized for their enormous expense and extreme tardiness in producing results. However, community composite scores calculated from the Preliminary Key Informant Questionnaire can be used to target rapidly the most needy communities. Supplementary data from the Observational Checklist and the Complete Key Informant Questionnaire can be used to translate the composite score into type and quantity of
assistance required by the target community.

In this rapid needs assessment methodology, data are collected and analyzed at the community level, which allows villages to be ranked according to need. This maximizes appropriate aid distribution to the most affected disaster victims, and minimizes valuable resource waste caused by the targeting of less needy populations. The indicators used in the analysis are based on pre-existing conditions in the community, and therefore provide a more accurate evaluation of the actual impact of the disaster.

An additional advantage of the methodology is that it offers a means of centralizing assessment and resource delivery activities and avoids duplication of efforts. Essential information flows quickly from the field to relief organizations; data-providers are linked directly to data-users. The methodology has the ability to follow the disaster through time. Thus, continual field presence, or monitoring, permits adjustments in resource allocation when required. The use of local indigenous field technicians provides the social and cultural insight needed to understand fully the implications of the disaster.

It might be argued that the initial cost of the assessment does not justify this activity, and that initial resources should be spent on supplying immediate delivery of essential aid to the disaster victims. However, in Guatemala, the total cost of the assessment was minimal, amounting to only US$800.00 per week. This value is extremely small when considering the improvement in targeting efficiency and consequent reduction in resource waste. Without any assessment activity, it is unlikely that immediate delivery of aid would provide affected populations with both the type and quantity of assistance that is required.

Another concern might be the precision of the data that are collected using this method. There is a trade-off between precision of data and time needed to collect them. In the case of disaster response, speed of analysis is extremely important. The rapid needs assessment methodology provides sufficiently valid data to initiate relief activities. Once a community becomes targeted for aid, follow-up information can be collected to get even more accurate information such as the exact number of victims and age and sex distributions. Compared with the validity of data that is usually used to determine needs in disaster situations, information collected at the community level can be very precise.

Although the methodology developed in Guatemala may not be appropriate in its identical form in other contexts, the authors present it as a framework for response to disasters and as an informal guide for subsequent assessment activities. It is probable that many of the elements will be useful in other settings, particularly in those disasters of gradual onset and extended duration such as war.

Before this formal assessment took place, relief organizations were aware of the general, but not particular, problems present in the study area. Because the methodology targeted specific villages that were seriously affected by the violence, the relief community was prompted to immediate action. The role that this technique plays as a catalyst in disaster assistance cannot be overlooked; it is perhaps its most important function.

The project acted as liaison between communities which demonstrated need and requested assistance, and the relief organizations which had resources for distribution. The methodologies incorporated in the assessment and coordination activities changed the structure of needs identification and relief delivery mechanisms in the study zone. They replaced delivery of assistance based on hearsay with targeting based on an analytical appraisal of actual need.
Acknowledgements

The authors wish to thank those who made this work possible. They are grateful to the board members and office staff of the organization Programa de Ayuda para los Vecinos del Altiplano (PAVA) who supported the field activities beginning in September of 1983. In particular, the authors wish to thank Harris Whitbeck, Vey Smithers, Peter Wright and Gloria Zamora de Garcia. The authors wish to acknowledge their special gratitude to the Chimaltenango Field Team, without whom this work could not have been accomplished. They include: Pablo Batzibal Tum, Juan Batz Saguach, Marcelo Mucia Raquec, Isaias Simon Costop, Mario Sincal Coyote, and Mariano Xinico Tujal. Most important, the authors wish to thank Dennis Wheeler who was the primary guide and manager of the project from its inception. The ultimate success of this work can be attributed to Dennis’s vision, creativity, compassion and complete dedication to the people of highland Guatemala.

References


Richard A. Margoluis, MPH
Robert R. Franklin, MD, MPH&TM
William E. Bertrend, PhD
Tulane University School of Public Health and Tropical Medicine
Department of Epidemiology and Biostatistics
New Orleans Louisiana USA

and

Thomas A. Sellers, PhD, MPH
Coping with Riverbank Erosion Hazard and Displacement in Bangladesh: Survival Strategies and Adjustments

C.E. HAQUE and M.Q. ZAMAN

As a deltaic plain, Bangladesh annually experiences riverbank erosion hazard due to sudden and rapid channel shifting, particularly in the major floodplain areas of the country. Consequently, valuable cultivable land is lost; also village settlements, markets and towns are destroyed, displacing tens of thousands of people. This paper examines the magnitude of river channel migration and encroachment on land, and the nature of human adjustment systems in the Brahmaputra—Jamuna floodplain, by investigating aspects of the social and cultural dynamics of resettlement of the displaced people. Some policy measures are recommended to improve the ability of the people in the floodplain to cope with these hazards.

INTRODUCTION: THE RIVERBANK EROSION PROBLEM

Bangladesh, situated on the delta of the Ganges–Brahmaputra–Jamuna river systems, is an occasional victim of various types of natural disasters, such as tropical cyclones, droughts and tidal surges. However, the country regularly experiences floods that cause a distinct type of hazard, namely riverbank slumping or erosion produced by shifting of the river channels that carry away valuable agricultural land and settlements (see Haque and Hossain, 1988; Haque, 1988a, 1988b). Destruction by river encroachment renders a large population landless and homeless each year in the Brahmaputra—Jamuna and Ganges floodplain areas, which consist of one of the most densely settled rural habitats in the world, ranging between 1,500 and 2,000 population per sq. mile. Such erosion, however, affects only a small proportion (i.e. 5%) of the total floodplain area. As an annual hazard, it is limited to the active floodplain of major rivers and some immediately adjacent older floodplain land. With more than 50% of all rural households already landless in Bangladesh (Jannuzi and Peach, 1980), the unpredictable occurrences of rapid river encroachment are devastating for the rural population, in particular for marginal peasants who lose their last parcels of land. The changing river courses, therefore, generate a process of involuntary migration among the potential and actual victims of the disaster, and accentuate the process of impoverization among the displaced population.

While erosion removes land, new and fertile lands reemerge every year from river beds in the midst of the river channels where they did not exist before. Thus, both erosion and accretion of land are the characteristic features of the courses of the
major river systems of Bangladesh. The newly formed bars and islands — locally called chars — are settled upon by people of both banks as new agricultural and settlement ‘frontiers’ and remain sources of perennial dispute among conflicting claim-ants (see Zaman, 1988, 1989). These mid-channel islands or some of their parts are occasionally wiped out in the following year; however, they may remain stable for many years or even decades. Hence, accretional land is also subject to continual change, erosion, and reformation. The interplay between the natural processes of river channel shifting and local socio-political structure has historically developed a complex human adjustment system in the floodplain areas of Bangladesh.

The purpose of the paper is threefold: first, to identify the magnitude of river channel migration and encroachment on land; second, to determine the extent and nature of population displacement caused by erosion; and third, to analyse the nature of human adjustment systems, by examining aspects of the social and cultural life of the displaced people. The paper is organized in the following way. The second section analyses the extent of riverbank erosion and the vulnerability of the population, both at national and local levels. The third section evaluates the nature of pre- and post-disaster adjustments at the local level. Finally, the policy implications of this study are discussed in the concluding part of the paper.

THE STUDY AREA AND METHODOLOGY

The area selected for the study of local or micro-regional data on riverbank erosion is Kazipur, one of Bangladesh’s worst affected upazilas or sub-districts. Kazipur is located on the west bank of the Brahmaputra—Jamuna river, comprising 189 sq. miles (491 sq. km). About two-thirds of its areas are chars. The eight sample mouza villages were randomly drawn from both mainland and char zones (Fig. 1). Household data are classified under two categories: displacees (who have lost homestead land due to riverbank erosion and were forced to migrate to a new place permanently or semi-permanently at least once in their lifetime) and non-displacees (who have never experienced displacement by land-loss). The sample size for the study is 547 household units, consisting of 322 displaced (i.e., disaster victim) households, while the remaining 225 non-displaced households represent non-victims or a control group. The questionnaire survey was carried out during March and April of 1985. The household heads were directly interviewed to represent each primary sampling unit (i.e. household). In addition to the survey, an anthropological study was carried out in one of the sample villages over a period of 15 months (May 1984—July 1985) for an in-depth understanding of adjustment strategies of the displaced households.

EXTENT OF BANK EROSION AND VULNERABILITY: LAND LOSS AND POPULATION DISPLACEMENT

National Level Perspective

Although river channel changes have been an historical phenomenon in the Bengal delta, only a few systematic attempts have been made to depict such changes. However, a broader national perspective of the magnitude of river channel migration and bank erosion problems can be obtained from the findings of investigations of the major river systems.

The International Engineering Company (IECO) made a pioneering attempt to delineate the changes of banklines of the Brahmaputra—Jamuna through a compilation of historical maps covering the period 1830—1963 (IECO, 1964). Measurements indicated that at the junction of the Old Brahmaputra, the width of the Brahmaputra—Jamuna channel increased
from 4.5 to 7.5 miles during the study period. Also, the junctions of the Dhaleshwari and Tista river migrated upstream about 9.5 and 7.5 miles respectively. It appears that the right bankline of the Brahmaputra—Jamuna river receded westward in all the reaches, whereas in the left bankline deposition of fill occurred in four of the six reaches.

The investigation of Coleman (1969) has provided a comprehensive picture of the Brahmaputra—Jamuna river channels. Two periods (i.e. 1944—1952 and 1952—1963) were selected for detailed study because of the greater reliability of the maps for these periods. During 1944—1952, the occurrence of maximum bank erosion was recorded at 20,800 ft on the left bank, four miles west of Tangail town. The maximum amount of build out was 22,400 ft during this period at a location three miles upstream from Bahadurabad. At some reaches, both banks of the river were retreating rapidly, whereas at others, both banks were instead building out rapidly. A greater number of stations along the right bank underwent bank
erosion compared with those of the left bank. Similar patterns persisted during the 1952–1963 period. The maximum erosion (11,000 ft) took place in Shaghata upazila during 1952–1963 and maximum deposition was recorded at 18,700 ft near Porabari of Tangail during the same period. In the light of his observations, Coleman (1969, p.158) concluded that bankline migration within the study period (1944–1963) was not predictable, rather it was erratic.

In a recent study, Galay (1980, p.546) measured rates of 'gradual migration', which referred to the shifting of the main flow channel within an existing watercourse into a new, defined channel, and found that rates varied from 200 to 5,500 ft per flood season in the Brahmaputra–Jamuna, Ganges and Meghna floodplains. Besides the gradual migration, the Brahmaputra–Jamuna experiences major changes when new channels are created outside the bankfull channel.

Since the early 1970s, effective applications of Landsat data have already been demonstrated in many relevant fields of land and water resources (see Lillesand and Kiefer, 1979). Hoque (1983) used Landsat data for detection of changes along the length of the major rivers of Bangladesh between 1973 and 1980. The change detection map revealed remarkable shifts in positions of channels of both banks of these two mighty rivers. The net areas of total land eroded were calculated at 299,518 acres, and areas of total land accreted at 265,175 acres during the study period (i.e. 1973–1980). However, the gross areas eroded and accreted between 1973 and 1980, taking individual years into account, were presumably much greater.

Overall, both the land-based map studies and Landsat data interpretation indicated that the Brahmaputra–Jamuna and Ganges, as braided rivers, have frequently changed their flow patterns, showing considerable shifts along the bankline. Since these fertile floodplain zones are densely settled, the encroachment of river channels onto the land puts a large part of the population of the country at risk of losing their land and other means of livelihood every year. Currey (1979), employing the ‘Delbecq-Delphi Process’, identified that, out of 495 upazilas of Bangladesh, people in 66 upazilas are vulnerable to riverbank erosion. It is estimated that about 19 million rural people residing on an area of 7,755 sq. miles are at risk from bank erosion alone in the Brahmaputra–Jamuna and Ganges floodplain area (Fig. 2). Besides a massive population of rural floodplain occupants, a sizeable urban infrastructure and population located on the banks of these great rivers is also at risk from this hazard. Many of these urban areas are important river ports (e.g. Chandpur, Serajganj, Chilmari).

Local Level Perspective: Kazipur

The location and amount of eroded and accreted land at the local level is recorded by the Department of Land Revenue of the Government of Bangladesh. However, due to the lack of necessary physical infrastructure, manpower and equipment, such surveys are seldom completed. The data on land-loss and consequent population displacement are usually unavailable from existing official sources, both at regional and local levels. As shown above, however, remote sensing provides a unique opportunity to estimate the amount of land-loss and land-accretion over a given period.

As indicated above, in the absence of any up-to-date survey of the region, it is difficult to ascertain accurately the amount of erosion and accretion land in Kazipur upazila. There are no year-to-year statistics on the amount of erosion and accretion activity. However, the Upazila Land Revenue Office provided some mouza-wise information recorded for the years 1977–78, 1983–84, and 1984–85. The Revenue
Officer informed us that official information on erosion and accretion land is primarily dependent on local surveys carried out only periodically. Table 1 presents data on the extent of erosion and accretion in Kazipur during 1977–85.

According to the Revenue Office, there are 117 mouzas in Kazipur upazila with a total area of 33,662 acres including the existing water bodies. However, the total amount of land within the upazila changes almost every year with new erosion and accretion of land. As shown in Table 1, in 1977–78 alone, Kazipur completely lost 20 mouzas to the river Jamuna–Brahmaputra with a total area of 9,841 acres, amounting to 30% of the total area. In addition, 22 mouzas were partially affected. The amount of accretion

![Major Rivers and Areas Liable to Riverbank Erosion in Bangladesh](image)

**FIGURE 2** Major Rivers and Areas Liable to Riverbank Erosion in Bangladesh
TABLE 1
Erosion and Accretion Activities in Kazipur, 1977–1985

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of mouzas wiped out</th>
<th>Land lost (acres)</th>
<th>No. of mouzas partially affected</th>
<th>Land lost (acres)</th>
<th>Accretion land (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977–78</td>
<td>20</td>
<td>9,841</td>
<td>22</td>
<td>n.a.</td>
<td>9,153</td>
</tr>
<tr>
<td>1983–84</td>
<td>8</td>
<td>4,023</td>
<td>27</td>
<td>n.a.</td>
<td>8,529</td>
</tr>
<tr>
<td>1984–85</td>
<td>12</td>
<td>4,774</td>
<td>3</td>
<td>n.a.</td>
<td>4,373</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>18,638</td>
<td>52</td>
<td></td>
<td>22,055</td>
</tr>
</tbody>
</table>

land recorded for the same year is 9,153 acres. This means the 93% of the land lost in 1977–78 was regained through accretion of new land from previous deluvion land.

One must, however, view these statistics with some caution; the process of erosion and accretion is a very complex phenomenon with a random character. However, in such a situation, Landsat data provide a better scope for depicting land-loss and accretion. In the present study, by using Landsat data, an attempt is made to estimate the amount of land-loss and the volume of the migrating population in Kazipur. The interpretation of the superimposed imageries of 1973 and 1980 reveals that, out of the eleven unions of Kazipur, seven were affected by bankline shifting during this period. Among these affected unions, five were from the char zones. It has been calculated that about 26.4% of the total area (i.e. 9,717 acres) of these affected unions were eroded during the study period (Fig. 3). Only 13.6% of the total area of these affected unions (i.e. 5,018 acres) was accreted between 1973 and 1980. Some six percent (i.e. 2,231 acres) of the area contained water in both 1973 and 1980 (Fig. 3). It has also been observed that the proportion of accreted land was nominal in the case of the unions located on the west bank of the river (i.e. Maizbari and Kazipur). The detection of eroded and accreted land, in aggregate, shows that 10.6% of the total area of Kazipur was eroded, while only 5.5% reemerged from the river bed between 1973 and 1980.6

The impact of such land-loss in the floodplain areas of Bangladesh involves primarily the loss of homestead land, housing structures, crops, cattle, trees, and household utensils. Thus, in contrast to floods and other pervasive types of riverine disasters, bank erosion generally leaves little scope for immediate recovery for marginal households. Loss of homesteads forces people to move to a new place without any option. Such sudden disruptions to their usual livelihood bring enormous economic, social, and psychological costs for displaced families (see Haque, 1986).

Data on vital statistics and migration of population at the local level are unavailable from government and non-government sources. However, using the local government census statistics and an indirect method of estimation,7 it is calculated that a total of 18,032 persons moved from their original place of residence in Kazipur during the period 1974–1981 (Table 2). Of these
11,759 moved out from their own mouza but stayed within the same union, and 6,273 moved to other upazilas.

The above figures suggest that about two-thirds (65.2%) of all migrants moved from their usual place of residence but stayed within the same union; the rest (34.8%) moved out of the upazila during the study period. It can be inferred that the majority of these migrants were displaced by riverbank erosion, since the unions under consideration all experienced severe river encroachment and land-loss between 1973 and 1981.

The results of the questionnaire survey clearly substantiate the high incidence of erosion-induced displacement in the study area. Fifty-nine percent (n = 547) respondents in the survey sample are from displaced households.
The recurrence of displacement per household in the sample was high, showing an average of seven displacements. The mean displacement frequency is remarkably high in the char zone sample compared with other mainland zones (see Haque, 1988b, p.247). The distribution of displacement frequency is shown in Table 3. These patterns confirm that displacement is more common in the char zone than in the other zones of the floodplain.

Overall, it appears that people affected by erosion do not usually opt for changes in resource use or location during their initial experiences; instead they tend to bear losses or perhaps to modify loss potential. An examination of the distance moved by the displacees during their last displacement clearly depicts these perspectives.

Table 4 shows the percentage distribution of respondents by categories of distance moved. The mode of the distance category

<table>
<thead>
<tr>
<th>Name of Union</th>
<th>Main/Char Land</th>
<th>Total Migration</th>
<th>Net Inter-Union Migration</th>
<th>Net Intra-Union (i.e. Inter-Mouza) Migration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maizbari</td>
<td>ML</td>
<td>8,362</td>
<td>-7,925</td>
<td>437</td>
</tr>
<tr>
<td>Kazipur</td>
<td>ML</td>
<td>1,715</td>
<td>3,519</td>
<td>5,234</td>
</tr>
<tr>
<td>Khas Rajbari</td>
<td>CL</td>
<td>1,334</td>
<td>-636</td>
<td>698</td>
</tr>
<tr>
<td>Tekani</td>
<td>CL</td>
<td>1,539</td>
<td>884</td>
<td>2,423</td>
</tr>
<tr>
<td>Nischintapur</td>
<td>CL</td>
<td>1,430</td>
<td>-963</td>
<td>467</td>
</tr>
<tr>
<td>Char Girish</td>
<td>CL</td>
<td>2,247</td>
<td>-752</td>
<td>1,495</td>
</tr>
<tr>
<td>Natuarpara</td>
<td>CL</td>
<td>1,405</td>
<td>-400</td>
<td>1,005</td>
</tr>
<tr>
<td>Kazipur (total)</td>
<td></td>
<td>18,032</td>
<td>-6,273</td>
<td>11,759</td>
</tr>
</tbody>
</table>

### Table 3

**Dispersion Frequency and Percentage Distribution**

<table>
<thead>
<tr>
<th>Displacement Frequency-Group</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–3 times</td>
<td>111</td>
<td>34.6</td>
</tr>
<tr>
<td>4–6 times</td>
<td>85</td>
<td>26.5</td>
</tr>
<tr>
<td>7–9 times</td>
<td>54</td>
<td>16.8</td>
</tr>
<tr>
<td>10–12 times</td>
<td>31</td>
<td>9.6</td>
</tr>
<tr>
<td>13 times and over</td>
<td>40</td>
<td>12.5</td>
</tr>
<tr>
<td>Total</td>
<td>321</td>
<td>100.0</td>
</tr>
</tbody>
</table>

mean 7 times

### Table 4

**Distance Moved by Displacees During Last Displacement**

<table>
<thead>
<tr>
<th>Distance in Miles</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $\frac{1}{4}$ mile</td>
<td>50</td>
<td>15.5</td>
</tr>
<tr>
<td>$\frac{1}{4}$–$\frac{1}{2}$ mile</td>
<td>92</td>
<td>28.7</td>
</tr>
<tr>
<td>$\frac{1}{2}$–1 mile</td>
<td>67</td>
<td>20.9</td>
</tr>
<tr>
<td>1–5 miles</td>
<td>105</td>
<td>32.7</td>
</tr>
<tr>
<td>More than 5 miles</td>
<td>7</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Total 321 100.0

mean 2,410 yards
lies in the 1–5 miles range. It also appears that less than three percent of displacees migrated a distance of more than five miles. The respondents indicated that their tendency to remain in the vicinity of their previous residence is usually influenced by two factors: first, a considerable proportion of them cannot afford to move greater distances because of their economic inability to bear the necessary transport cost and other initial expenses at the place of destination; and second, the majority of displacees have strong belief that their land will reemerge soon, allowing them to return to their place of origin in the near future. In most cases, however, such hope soon becomes despair, due to the multiple socio-political factors that influence access to newly emerged char land (see Zaman, 1988, 1989).

Although the incidence of destitute displacees is quite high in the region, relief and rehabilitation programmes are seldom undertaken by national government or non-government agencies or by local government offices. The lack of any effective support from local government officials, community leaders, and relief agencies is clearly reflected in the source of assistance to displaced households at the time of their last displacement (see Table 5). About one-fifth of displaced households received some kind of support; the majority were left without any assistance from any source. Among the limited assistance received by displacees, most was provided by relatives and friends. Other forms of assistance to hazard victims are almost non-existent in the study area.

SURVIVAL STRATEGIES AND ADJUSTMENTS
Zaman (1986, 1988) made a systematic analysis of the nature of local level responses and measures of adjustment, and the complex socio-economic factors that determine adjustment strategies to cope with this repeated displacement. It has been found that displacees in the active floodplain are dependent upon their kin and local corporate groups for assistance and

<table>
<thead>
<tr>
<th>Assistance received during last displacement</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>68</td>
<td>21.2</td>
</tr>
<tr>
<td>No</td>
<td>253</td>
<td>78.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of assistance (multiple response possible)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relatives</td>
<td>48</td>
<td>70.6</td>
</tr>
<tr>
<td>Friends</td>
<td>27</td>
<td>39.7</td>
</tr>
<tr>
<td>Other villagers</td>
<td>14</td>
<td>20.6</td>
</tr>
<tr>
<td>Community leaders</td>
<td>3</td>
<td>4.4</td>
</tr>
<tr>
<td>Upazila officials</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>National government</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Relief agencies</td>
<td>1</td>
<td>1.5</td>
</tr>
</tbody>
</table>

TABLE 5
Sources of Assistance Received by Displacees during Last Displacement
support in the absence of institutional public assistance. Our survey data (see Table 5) suggest that friends and relatives provided both moral and material support to cope with dislocation and adjustment.

Kinship, Friendship and Samaj in Local Adjustment

It is particularly important to realize that adjustment to displacement in the active floodplains of Bangladesh has been conditioned historically by social, cultural and political factors. It is precisely for this reason that displacees generally move short distances even after experiencing multiple displacements. The adjustment choice is eventually the product of a complex set of factors including: (i) the availability of land for resettlement; (ii) support from friends and gusthi (patrilineage) people; (iii) the possibility of maintaining closer ties with the samaj (local corporate group based on kinship and patronage); and (iv) whether or not displacees have committed themselves to such patronage as sharecropping or free-use of land for homesteads from relatives and/or locally powerful jointedars and talukdars (classes of rich peasants and large landowners) who head samaj organizations.

Table 6 lists the reasons given for moving to the present place of destination by 322 displaced households. It appears that the single most important factor in choosing the present destination after previous displacement is the presence of friends and patrilineal relatives (55%). Therefore, kinship remains an important factor in migration and adjustment decisions. ‘How can you live without your kinsmen? You need them always’, said a settler. Existence of privately-owned land (27%), khas (unused government land) or rented land (19%), and free use of land provided by relatives (10%) were some of the important factors for moving to their present place of residence by the displacees.

About eleven percent of all respondents considered it important to remain within, or to maintain closer ties with, their traditional samaj organization prior to moving to the present place of residence. The samaj, an informal but important local social grouping based on kinship, and the

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequency of Responses</th>
<th>% of HHs Stating Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had own land</td>
<td>88</td>
<td>27.32</td>
</tr>
<tr>
<td>Availability of khas/rented land</td>
<td>66</td>
<td>18.63</td>
</tr>
<tr>
<td>Free use of land provided by relatives</td>
<td>35</td>
<td>10.86</td>
</tr>
<tr>
<td>Returned to depositional land</td>
<td>45</td>
<td>13.97</td>
</tr>
<tr>
<td>Hoped land would reemerge</td>
<td>29</td>
<td>9.00</td>
</tr>
<tr>
<td>Support and/or presence of gusthi people and relatives</td>
<td>176</td>
<td>54.65</td>
</tr>
<tr>
<td>Closer ties with samaj</td>
<td>34</td>
<td>10.55</td>
</tr>
<tr>
<td>Had no money to move elsewhere</td>
<td>30</td>
<td>9.31</td>
</tr>
<tr>
<td>Had no time for alternative</td>
<td>49</td>
<td>15.21</td>
</tr>
<tr>
<td>Others</td>
<td>29</td>
<td>9.00</td>
</tr>
</tbody>
</table>

* Respondents could indicate and rank more than one response.
social and religious interest of its members, is well recognized in Bangladesh rural studies (see Bertocci, 1980; Zaman, 1982). As a local political and religious community, the samaj is the primary arena within which members interact most extensively and are mutually involved in social and ceremonial networks. Therefore, any detachment, or separation from samaj puts the victim in a relatively difficult situation, due to both loss of membership and of the support of the group. Out of the total of 322 households, 141 (44%) reported separation from their respective samaj due to dislocation. So far as is possible in this hazardous position, the general tendency found among the displacees in Kazi pur villages is to cluster together with their kin and samaj group in their new place of residence.

Politics, Patronage, and Char Violence: the Dynamics of Local Resettlement

The discussion in the previous section underscores the dependence of displacees upon their kin and local corporate groups for assistance and support. In this section, we argue that the adjustment patterns of those displaced by riverbank erosion in the active floodplains of Bangladesh are conditioned by wider social, economic and political relationships, such as village factions, and the patronage system.

Displaced households having no land of their own to resettle, or who cannot expect any material assistance from their equally poor relatives, have very limited choices. One option is to migrate to cities, but the survey data presented earlier (see Table 4) and field observations found that the extent of out-migration from Kazi pur is limited. A large majority of displaced households remain in the chars as ‘patron-tied’ dependents of the village faction leaders (matabbars) and locally powerful talukdars, who provide land and necessary support for resettlement, because the landless displaced destitutes are a cheap ‘labour pool’ to work on their land. The displacees are also useful to the village leaders and local talukdars for two more important reasons: first, these dependent peasant households are readily available as lathiyals (clubmen, armed retainers) to organize violent fights when necessary to gain control over newly emergent char land. Secondly, they are also captive voters for local government and national elections. According to the survey data, over 50% of households in char villages are such displaced and landless ‘dependents’.

An in-depth anthropological study was carried out in one of the villages to understand the nature, basis, and mechanisms of such patronage relationships in the village with respect to resettlement. In all, the villagers identified eight different factions (dals) with which they are aligned either by kinship or economic relationships. The faction leaders are typically large landowners in the village. Other than kinship, the basis of recruitment to factions in the village is primarily economic, such as (i) provision for free-use of land for homesteads by the displaced families; (ii) employment as agricultural labour; and (iii) sharecropping. A particular displaced household may be tied to a faction leader by one or all of those economic relationships. In return, the ‘dependents’ are obliged to support the faction leader in village-level political struggles and to join organized conflicts as lathiyals for control over new depositional land. The network of relationships of the village faction leaders extends to many different neighbouring villages through a system of alliance with, or opposition to, one or another prominent talukdar. They often work as political ‘agents’ of talukdars to organize land conflicts which are endemic in the riparian villages in the floodplain.

People of Kazi pur told us repeatedly that in char life violence is the name of the game, and the ultimate arbiter of all disputes over the land. The local talukdars are so powerful that the poor and their
dependents would not dare to disoblige them. The *talukdar*, one informant said, 'can make a day night and can pick up anyone from the *char* at his will, and he may not return to the *char* for the rest of his life.' Sometimes local law-enforcing agencies also fail to make their law operative if it affects the interest of the *talukdars*. People view the brutalities involved in the process of land grabbing as part of the natural process of land erosion (Wahed et al., 1983).

Traditionally, ownership and disputes over alluvion and diluvion land were regulated by local customs and titles whereby previous owners had access to new depositional land. The first legislative enactment for the regulation of disputes was the Bengal Alluvion and Diluvion Act of 1825 (Gupta, 1940; Kabir, 1961). In the course of almost 150 years since then, a number of changes have taken place. However, the most drastic changes in ownership rights of accretion land were made by the Presidential Order of 1972 (Numbers 72, 135, and 137), which provided that all newly emergent land previously lost by diluvion shall now be considered *khas* land and shall remain under the absolute control of the government. The objectives of the Presidential Order of 1972 were to recover all such land from the control of the local *talukdars*, and to redistribute it among the displaced and landless peasants for cooperative or collective farming and resettlement (Ali, 1980). Despite this current legislation to the effect that new accretion land is for redistribution and resettlement of the displaced population, very few people have actually gained their due share of land in the newly emerged *chars*.

The difficulty of access to newly emerged land is compounded further by delayed and fictitious land records and delaying settlement of the new *chars* by the Land Revenue Department. The delayed and periodic settlement operations again work to the benefit of the local *jotedars* and *talukdars* as land grabbers, because ‘possession’ remains a crucial factor in the eventual determination of ownership. A new *char*, once it has stabilized, becomes a target of encroachment. Typically, groups of landless families are moved onto the *char* apparently supported by powerful *jotedars* who make violence endemic in *char* areas. By the time the Directorate of Land Records and Survey sends out a team for local survey operations, fictitious records pertaining to the ownership of such *chars* are often completed by the *jotedars* in collusion with corrupt officials of the Land Revenue Department itself. The Government of Bangladesh has reportedly lost control over many *chars* due to this delay in survey and settlement operations (Ali, 1981). The lack of timely and accurate survey operations, therefore, is a contributing factor to the endemic land conflict in *char* villages.

The use of violence, dispossession, murder, rape and confiscation of crops and animals have reportedly become almost established practices of *char* life in Bangladesh (Wahed et al., 1983; Zaman and Wiest, 1985; Zaman, 1987). The selective use of violence by local *talukdars* and their dependent *lathiyals* work as the ultimate arbitrator of all disputes over new *char* land. When a *talukdar* succeeds in a violent fight, resettlement takes place usually with his own support groups and/or kin and dependents, and the *talukdars* remain the virtual owner of the entire *char*. Thus these aspects of village factionalism and patronage relationships represent systematic socio-political adaptations to the whole phenomenon of erosion and displacement.

**THE FUTURE OF THE DISPLACED POOR**

The 1983 Land Reform Commission Report (Government of Bangladesh, 1983) took cognizance of the systematic use of violence in the control and use of *char* land in Bangladesh, but the Report mispre-
sented these issues as 'law and order' problems. The illegal and violent seizure of land from the weaker by the stronger and hence the concentration of the control of surplus in the hands of the jotedars and talukdars — the 'rich kulaks' — are all made possible by the marginal and frontier nature of char land and by a state apparatus that is not strong enough to control these margins or is not interested in doing so, because it is a tool of the class of large landowners that controls and has established interests over the delta country. The problem is thus deep-rooted in the social, economic and political structure of Bangladesh. There is an evident need to rethink existing char land policies and administration in the light of experiences gained since the proclamation of the 1972 Presidential Order. The foregoing discussion indicates that accomplishment of the reform measures and redistribution of depositional land among landless and displaced population are still far away. The 1975 amendment, which allowed access to depositional land by the previous owners, provided local implementing officials with ample power to make decisions which invariably favour the local jotedars at the expense of the poor and landless peasants.

The evidence provided in this paper about the mechanisms and dynamics of the use and control of depositional land clearly demonstrates the need for a 'total' review of the situation in char areas. We would recommend the immediate formation of a high-powered Commission with objectives for reformulation of a comprehensive char land policy for Bangladesh. This is particularly important given the vast potential for new depositional land in the southern Meghna delta. The future of the poor and of those displaced by riverbank erosion lies mostly in proper utilization of the new land and relocation of the displacees in the newly emerged chars. The Commission should look critically into issues such as (i) ownership and tenural status; (ii) reorganization of the presently centralized settlement operations, with a view to establishing immediate 'on-the-spot' surveys of accretion land; (iii) maintenance of up-to-date records of rights, and where necessary, new surveys of accretion land; and (iv) better coordination between different agencies related to char land administration. Finally, we strongly recommend that local peasant organizations should be involved and be allowed to play an important role in any implementation of char land reform and settlement policies at the village level. Improvements in the legal framework, in implementation, in resettlement policies and in economic development policies will help the displaced population to cope with this recurrent phenomenon.

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Notes

1. The upazila is the basic administrative unit in Bangladesh. The average area is about 112 sq. miles (181 sq. km) and the average population is about 176,000.
2. The mouza is a revenue unit, usually around 590 acres (239 hectares), and has an average of 257 households or 1,400 people. A mouza may consist of one or more socially-defined villages.
3. A multi-stage stratified sample design was employed in the study. For further description of the sample design and methodology, see Haque (1988a).
4. The rationale for using remotely sensed data and mapping lies in the fact that the technique provides greater precision for mapping locations than land-based mapping techniques. The technique also allows a time efficient assessment of land-water conditions.
5. The analysis presented in this study involved
a questionnaire survey of village elders, retired government officials, foreign aid distributors, and technical experts. The composite map was drawn combining the mental maps of these groups and the available spatial data; thus, the study is primarily based on non-physical sources.

6. Landsat imageries were enhanced to the scale of 1:50,000 for delineating smaller spatial units such as mouza and unions, and for subsequent interpretation of the data. The enhanced Landsat data of Multispectral Scanning (MSS) band 7 of the study area were superimposed by the preparation of transparent overlays. Measurements of the estimated land eroded and accreted were made by using the Lesico digital planimeter.

7. By comparing the changes in vital rates in local spatial units with the regional or national rates, the volume of population migration can be measured. This indirect method can be recommended only for cases where direct data on migration are not available. For details see Shryock et al. (1979), pp. 377–396.

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C.E. Haque
Department of Applied Geography
Ryerson Polytechnical Institute
350 Victoria Street
Toronto, Ontario
Canada M5B 2K3

and

M.Q. Zaman
Department of Anthropology
The University of Lethbridge
Lethbridge, Alberta
Canada T1K 3M4
Effects of Floods on the Use and Condition of Pit Latrines in Rural Bangladesh


The severe floods of 1987 in Bangladesh had devastating effects on many development activities. Here, the use and condition of improved sanitation facilities (double pit water sealed latrines) during the 1987 peak flood period are presented. Two surveys on the use and condition of the latrines were carried out in May (pre-flood) and September (post-flood) 1987 in a rural area 60 km north of Dhaka, with a population of about 4500. General usage of the latrines by the population aged five years or more decreased from 88% to 78% (p < 0.001) after the flood. Only 40% of the 343 latrines which were in use and had no damaged component at the time of the pre-flood survey still had no damaged components after the floods. Fencing was the component which suffered the most damage. It was the only component which was installed and maintained by the users, project staff being responsible for all other components. The estimated post-flood repair cost was approximately US$4.0 per latrine. Development of an affordable and durable fencing is recommended.

INTRODUCTION

Floods recur annually in Bangladesh and are one of the greatest threats to rural development activities. A large part of the country is affected, with water levels at their highest between July and September. The floods of 1987 and 1988 were particularly severe, estimated to be the worst for 40 years and 50 years respectively.

At the beginning of the International Drinking Water Supply and Sanitation Decade (1981–1990), less than 1 percent of the rural population of Bangladesh had sanitary latrines (Wahed, 1985), and a target of 13 percent coverage was set to be reached by the end of the decade. As part of these efforts, an integrated programme of water supply, sanitation, and hygiene education was implemented at Mirzapur, a rural area 60 km north of Dhaka. Regular monitoring of the use and condition of the latrines allowed assessment of the influence of the 1987 floods on these factors and the findings are presented in this study. The implications for sanitation projects facing similar environmental hazards are also discussed.

MATERIALS AND METHODS

The Mirzapur Handpump Project was launched in early 1984 and ended in December 1987. During this period, improved water supplies, sanitation facilities and hygiene education were provided to
two villages (intervention area) in Mirzapur, an area typical of the deltaic regions of Bangladesh. The intervention population comprise approximately 800 households and 4,800 people. A socio-economic survey was conducted in August 1987, which included information on household possessions. A household possessing one or more of any of the items of radio, watch, bicycle or ceramic dining utensils was classified as a wealthy household. Double-pit, pour-flush sanitary latrines were installed in more than 90 percent of the households. The main sub-surface components of the latrines (Figure 1) were the two pits, each lined with four 68 cm-diameter concrete rings, one Y-
junction, one Y-junction cover, connecting pipes, two pit covers and one waterseal trap. The surface components consisted mainly of a slab and a super-structure in the form of fencing surrounding the slab. Except for the pit cover and fencing, all other components were mainly designed and constructed according to existing Bangladesh specifications for pit latrines. Burnt clay domes from the local market were installed as pit covers instead of the standard concrete covers. To create a feeling of ownership among the community, each family was asked to construct the fencing and, since no standard design exists, no design was suggested. All of the other components were fabricated by government masons and project staff and installed under the strict supervision of project staff during the period from January 1985 to February 1986.

During installation, an effort was made to build all major components (except the pit) at the same level as the houses as these usually are above normal flood level. Meeting this design criterion often required earth filling. Except for the slab and fencing, all components were covered by earth. All necessary maintenance and repair (except fencing) were done by project staff. Use of the latrines was supported through continuous extensive hygiene education programmes.

Five quarterly surveys were conducted to monitor the use of latrines and the condition of major components. A component was considered ‘damaged’ when repair needed to be undertaken by project staff. The housewife, or her spouse, was questioned about the use of the latrine by each member of the family, using census cards which were regularly updated from monthly demographic surveillance data. A latrine was referred to as ‘used’ when all or any members of the household were using it. Use of the latrines at the individual level was also recorded. Use of the latrines by young children under five years was found to be inconsistent, and this age group was excluded when use rates were calculated.

Out of the 754 installed latrines, information on 720 latrines, (consisting of used, non-used, damaged and partially damaged latrines) was available for study. The remaining 34 latrines were not used after installation, owing to major functional problems. Assessment of the damage to latrines and cessation of their use due to floods was based on those latrines (343) which had no damaged components and were being used by the household in the pre-flood survey. Data are presented from the pre-flood survey (May–June 1987, third quarterly survey) and the post-flood survey (September 1987, fourth quarterly survey). The latrines where families were absent in either of the surveys were excluded.

The chi-square test, McNemar’s test and Fisher’s exact test were employed, as appropriate, for the comparison of proportions.

RESULTS
Out of 720 latrines, 655 latrines (91%) were in use in the pre-flood survey and this percentage dropped to 81% in the post-flood survey (Table 1). Latrine use by the population over five years of age in the pre-flood survey was 88 percent and it decreased to 78 percent (p< 0.001) after the flood. This decline was similar for males and females: latrine use dropped from 88.7 to 78.2% and for males 87.5% to 78.5% for females.

For the 343 latrines with no damaged components and in use prior to the flood, the proportion of latrine users dropped from 93 percent to 83 percent. Out of the 343 latrines, 32 (9%) were not used at all in the post-flood survey (the non-used latrines) while the other 91 percent were still in use (the used latrines).

The damage caused to individual components of the 343 latrines is shown in Table 2 for non-used and used latrines. Overall,
only 40 percent of the 343 fully working latrines had no damaged components after the floods, and this differed markedly between the non-used latrines (0% vs 44%, \( p < 0.001 \)). The Y-junction and water-seal components were the least affected, while fencing structures suffered the most damage. Damage to slabs, pits and fencing was significantly greater in the non-used latrines than the used latrines.

Fencing was the responsibility of the household and therefore varied in type and quality according to choice and affordability by users. Damage to fencing was compared

<table>
<thead>
<tr>
<th>Component damaged</th>
<th>Used latrines ((n = 311)) (%)</th>
<th>Not-used latrines ((n = 32)) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No component damaged</td>
<td>137 (44)</td>
<td>0 (0)**</td>
</tr>
<tr>
<td>Slab</td>
<td>34 (11)</td>
<td>12 (38)**</td>
</tr>
<tr>
<td>Pit cover</td>
<td>59 (19)</td>
<td>12 (38)*</td>
</tr>
<tr>
<td>Water-seal</td>
<td>1 (&lt;1)</td>
<td>2 (5) NS</td>
</tr>
<tr>
<td>Y-junction</td>
<td>1 (&lt;1)</td>
<td>0 (0) NS</td>
</tr>
<tr>
<td>Pit</td>
<td>22 (7)</td>
<td>14 (44)**</td>
</tr>
<tr>
<td>Fencing</td>
<td>97 (31)</td>
<td>24 (75)**</td>
</tr>
</tbody>
</table>

Comparison of used and not-used proportions
* \( p < 0.01 \)
** \( p < 0.001 \)
NS — not significant at the 5% level
between households classified as wealthy and not wealthy, since it was assumed that quality of fencing and damage might be related to wealth. Fifty-seven per cent of the households were classified as wealthy, and damage to fencing was only slightly less in this group (33%) than in the remainder (39%).

The approximate average cost of repair (without labour) incurred by the Project (including fencing made of jute sticks and potential service of one year) was US$4.0 per latrine. About 53 percent of this cost was required for the superstructure. Repairs of pits, slabs and pit covers contributed 25, 15, and 6.2 percent respectively.

DISCUSSION

Sudden natural disasters are often believed to cause not only widespread death but also massive social disruption and outbreaks of epidemic diseases and famine (Pan American Health Organization, 1982). The risks of increased disease are greatest where there is crowding and standards of sanitation have declined (Pan American Health Organization, 1981). In the case of Bangladesh, 20 percent of the area is flooded almost every year. After disasters, the incidence of communicable diseases, such as diarrhoeal diseases, is reported to show a tendency to increase (Siddique et al., 1988). Due to the recurring nature of floods in Bangladesh, it is important that the effects of flood on sanitation programmes are studied.

In this study, we assessed the effects of 1987 flooding on the use and the condition of double-pit sanitary latrines in a project where these facilities had undergone careful installation, were used more or less adequately, received regular maintenance, benefited through continued hygiene education support and were under regular surveillance.

The post-flood use rates of latrines differed significantly from those of the pre-
flood rates (p<0.001). The use may still appear quite high in contrast to the country's very low rate of use of sanitary latrines. The reasons behind this low use rate of latrines are beyond the scope of this discussion, but we believe that the assessment of the effects of floods on development activity is more meaningful for planning and implementation purposes when that activity is already functioning at an optimum level. This project provided latrines to more than 90 percent of the households, maintained the latrines regularly (except fencing), supported the use of latrines through continued hygiene education and monitored the latrines through five quarterly surveys. Out of the five surveys (three prior to the 1987 flood and two after the flood), all except the immediate post-flood survey (81%) showed the use rate of latrines to be more than 91 percent (Aziz et al., 1988). There was no significant difference among the use rates of the latrines in the quarterly surveys, except in the immediate post-flood period. An evaluation report on the village sanitation scheme II (DPHE, 1985), conducted on 1,204 water seal sanitary latrines from 238,860 latrines in the 15 sub-districts of the country, also found a high use rate (96%).

Our results also show that certain latrine components are vulnerable to flood damage and some are most likely to lead the users to abandon the latrine. Therefore, they require improved design and more careful installation. The component suffering the most damage, the superstructure, was the only component for whose construction and maintenance the community was responsible (except repair/reconstruction after the 1987 flood). Damage to the superstructure could not be related to the wealth of the household, implying that the role of the superstructure in the use of latrines had not been overlooked. Other studies in Bangladesh (Gibbs, 1984; DPHE, 1985), where latrines were purchased by the users, found a high association between
absence or damage of superstructure and non use of latrines in normal periods of the year. Although fencing provides the needed privacy for the facility, neither the DPHE project (1985) nor our project supplied any standard design or material for it. The national sanitation programmes in Mirzapur sell pit latrines for about US$3 (Mirzapur, 1989). A fence made from jute sticks in season (normal expected service life of about two normal years) would cost about US$5 (Patwary, 1988). Therefore, it is important that an affordable, sturdy and dependable fence should be developed, field tested and promoted to support the continued use of latrines.

The latrine pits, pit-covers, and slabs were also damaged as a result of erosion around the structures. Due to space restrictions, the latrines were often installed at the edge of the owner's raised homestead land, with pits on the slope. It is possible that the earth covering of these components was not compacted adequately or the earth base around the pit was not sufficient to withstand erosion by the flood water. Proper compaction of soil and the presence of adequate base and earth filling after the rain season are essential for the protection of pits, pit-covers and slabs. Damage to pit-covers would also be minimized through the use of more durable materials in their construction. The latter option is more expensive, but when the contents are exposed, the latrine fails to provide a sanitary environment — which is its main purpose. However, hygiene education related to the maintenance and functioning principle of the latrine could be helpful, because some of the pit covers were reported to be broken by the users with the intention of washing out the contents of the pit into the flood water (Aziz et al., 1988).

Overall, 60 percent of the 343 latrines suffered damage and needed a project input. The estimated average repair cost of $4.0 per latrine (incurred by the project) is about four times the daily rural wage ($1.07), barely enough to support a family of three for a day (UNICEF, 1987). In the aftermath of a flood, when the availability of food, work, shelter, etc. worsens, this amount of money for repairing a latrine may not be affordable by many users.

Therefore, in spite of extensive continued efforts by the project, the flood affected the use rates and components of the latrines, and recovery of use rates was only achieved through considerable expenditure on repairs. Such effects are likely to be greater in other projects operating on a larger scale, where resources would not permit such inputs and the community would bear the responsibility of installation, maintenance and repair.

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Bilqis A. Hoque
Community Health Division
International Centre for Diarrhoeal Disease Research
Bangladesh (ICDDR,B)
GPO Box 128
Dhaka 1000
Bangladesh

S.R.A. Huttly
Department of Population Sciences
London School of Hygiene and Tropical Medicine
Keppel Street
London WC1E 7HT

K.M.A. Aziz, Z. Hasan and M.Y. Pawary
ICDDR,B
Determining the Future Policies for Disaster Management in the Southwest Pacific

JOHN OLIVER

There are still deficiencies in the delivery of disaster aid and the overall policies need further re-examination. This paper looks at the particular circumstances of the island nations of the Southwest Pacific. In their context, dependence on outside help for counter-disaster management is recognised, but in the light of the present economic, social, cultural and political characteristics of these countries, it is concluded that aid donors should shift the emphasis of their activities to the promotion of a greater self-help approach in the individual countries, as against the provision of emergency material aid from outside. The extent to which this policy could be adopted depends on the local resource base. Rather than relying mainly on emergency ad hoc aid delivery following each disaster, it is considered that donors would improve the disaster response through the previous provision of advice, training and funds. This would facilitate the growth and development of internal counter-disaster organizations, and assist countries to make their own decisions on the timing and nature of the aid required. Such a policy could also meet concerns that arise about external interference.

INTRODUCTION

The organization of human society requires adjustment to both natural and social environmental conditions. Environmental extremes of natural or technological origin, when they impact on society, have the potential to give rise to disasters if the resources, capability and skills of the affected society are overstressed. Either help must be sought from other societies, or specific planning must be undertaken and management systems established within the areas at risk to deal with such an eventuality. Debate about the appropriate aspects of response still demonstrates that consensus has not been attained about management principles, policies and practice. Weaknesses in planning for and reacting to disasters still persist. Post-disaster audits reveal too often the repetition of response errors identified in earlier events. In both conceptual and practical terms, what we currently think and do still requires searching analysis.

The potential for and the most likely type of disaster varies between different areas and different societies (or communities). We must anticipate, therefore, that, as well as underlying general concepts, there will be other aspects unique to specific areas, societies or categories of threat. Whether disasters are of natural or human origin can also introduce further differences, but this is not a subject pursued here.
DISASTER RELEVANT CHARACTERISTICS OF THE SOUTHWEST PACIFIC STATES

This paper focuses upon the island nations of the Southwest Pacific, many of which face a range of natural hazards, including tropical cyclone, flood, drought, volcanic eruption, earthquake, wild fire, landslip and tsunami. Like many Third World areas, life in these nations is particularly vulnerable to economic and social disruption from such causes, with a frequency and scale that makes an effective and efficient disaster response system essential. Their particular level of development means that natural rather than technological disasters predominate, though it does not necessarily follow that the response systems to meet their present threats are not applicable to other, as yet not experienced, disasters.

A variety of characteristics, physical, political, economic, social and cultural, give both distinctiveness and coherence to the study area. Apart from New Caledonia and American Samoa, the island states of the Southwest Pacific have only in recent years become independent and responsible for their own affairs. Campbell (1984, p.85) suggests that a legacy of colonial rule is a condition of ‘critical vulnerability to disaster’. These states often comprise groups of many minute islands dispersed over extensive sea areas, so that there are acute problems of maintaining good, rapid communications and transport systems. A decline in inter-island shipping has accentuated this problem. There are, of course, internal degrees of difference represented by Papua New Guinea or Fijian Vitu Levu at one end of the scale and the Cook Islands or Tuvalu at the other.

Traditional social systems, some almost feudal or tribal, influence the patterns of national, provincial or even local government. For many of the states, or islands within them, there are problems of population and pressure on land.

Urban growth, mostly in its infancy, is largely restricted to the national and sometimes provincial capitals. In these towns, some of the incipient problems of urban disaster are beginning to appear and to differentiate them, to as yet but a small extent, from the predominantly rural population. On the Pacific islands, rural areas often feel the effects of natural disaster impact more than the towns and may well suffer neglect in the delivery of emergency aid. Village communities, often located on the coast, or even one village on an individual atoll, are characteristic. Kinship ties are strong in rural communities. Such isolation and the peripheral locations of individual islands or settlements complicate disaster response. Local and regional trading links may, however, provide the basis for indigenous disaster relief. Village communities usually have some simple form of local council or other vestiges of pre-European social and political organization, which can undertake a valuable role in disaster. In most of the states the church plays a major social role. Carter (1984a) emphasizes that ‘human and material resources in villages and communities are vital to an effective national response to disasters’.

The island economies are fragile and suffer from a lack of resources; even at a low level of development they cannot sustain their imports without aid from grants or loans. Nations are thus placed in a position of dependence and are unable to meet, unaided, additional burdens on expenditure (or loss of limited earning capacity) that disaster can cause. Agriculture is the basis of their economies and presents a mixed system of subsistence and cash crops. Subsistence agriculture relies primarily upon tropical root and tree crops, supplemented by small-scale animal husbandry and, in many communities, fishing. The increasing emphasis on cash crops, frequently monocultural and relying heavily on the coconut, exposes their economies to fluctuations in world demand and prices.

For historic and economic reasons, it is
understandable that small island states, even if not economically viable, should value their independence and national identity highly, wish to be as self-reliant as practicable and be very sensitive about external influence, however well-intentioned or indeed necessary it may be. Concern surfaces about external paternalism, and even Australia and New Zealand may be viewed as intrusive ‘big brothers’ in an aid context. The Southwest Pacific is no longer free from international tensions and political bargaining. Faced by these circumstances, there is growing sensitivity about interference from outside, which can include aid and advice. ‘The Pacific now needs handling with kid gloves’ (Deron, 1987). The new generation becomes more assertive and nationalistic. In 1984 the then Minister for Foreign Affairs and Trade of Papua New Guinea described aid as ‘misleading, condescending and exploitative’. Immediate post-disaster emergency aid from Australia or New Zealand has usually involved valuable help from specialist military personnel, especially engineers or communication technicians or helicopter crews. Caution has to be used, however, in employing them so as to avoid any political repercussions.

PROBLEMS ASSOCIATED WITH DISASTER AID

Disaster response, by its very nature, often leads to calls for outside help to provide goods, skills or logistical capabilities which do not exist, at least at requisite levels, within the affected area. Such response covers the range of interconnected activities customarily listed under such headings as prevention, mitigation, preparedness, emergency relief, rehabilitation and reconstruction. Determining the emphasis between the different components of a disaster response package is a challenging task. Their implementation requires planning and action in many cases at times other than when a disaster occurs. National and other agencies, organizations and infrastructures must be in place and adequately covered by legal recognition, available resources and established plans and procedures. In the Southwest Pacific, disaster planning and management are mostly in the early stages of development with a main emphasis at present on emergency disaster aid and subsequent rehabilitation.

Meeting such a range of special needs, additional to those needed for the day-to-day governing and support of the state, may not be feasible within countries with limited resources. Achieving adequate response is likely to mean that external assistance is inevitable. This is often most apparent in the immediate post-event relief phase. Without any necessary inference the term ‘disaster intervention’ is often used. Avoiding help being seen as interference, or even being viewed as an extension of the donor’s self-interest (whether government, international agency or non-government body) is particularly difficult.

Outside advice, or even worse, the assumption of control in emergency relief activities, can generate friction and resistance in a disaster emergency. Even in a developed country, when national counter-disaster organizations move into a disaster area in force, local susceptibilities are often ruffled. How much more can adverse reaction to external action be expected in such circumstances in the Southwest Pacific. In March 1982, for instance, the disaster authorities in Tonga’s capital dealing with the effects of tropical cyclone ‘Isaac’ had to contend with the convergence of some 40 experts and external aid representatives, all well-intentioned, but also single-minded about their particular concerns. This is not too uncommon a situation.

When a disaster occurs, even in small countries, government has the primary responsibility for taking steps to deal with the situation. Some system of established government institutions and structures,
directed by ministers or departmental heads with pre-determined responsibilities and objectives, usually exists already. After a disaster, their aim is eventually to get back to the stable pattern of political, economic and social life (more specifically for their own areas of concern), perhaps combining, in this process, some improvements with the re-establishment of pre-existing conditions. Outside help, channelled through the national government, has increased community expectation that the government will provide aid and this has increased the pressure upon it. The internal system, therefore, already presents some guidelines and constraints on what is to be done, either over the whole range of disaster response, or more narrowly in the relief phase.

Realising that the only secure way to proceed in the future is through self-reliance, Pacific Island states put a strong emphasis on avoiding, either consciously or inadvertently, the introduction of different tastes, new trends in consumer goods, use of external building styles or other non-traditional activities, which can only be satisfied by imports and add to the burden on unbalanced economies or even result in inappropriate diets or life-styles. Waddell (1983) suggests that dependency on the developed nations has been increased rather than reduced by relief. He is critical about the destabilizing effect of external aid and even the possibility that humanitarian response is a facade covering donor self-interests.

It would be unrealistic to deny that donors are concerned about their image, and that the kudos their activities can generate may push their ideas on what should be given or how it is provided. This situation must be carefully scrutinized to ensure that it does not operate to the recipients’ disadvantage or cause offence or even opposition to needed help. It is unduly cynical to view all disaster aid (relief or in other phases) thus, but it cannot be denied that problems arise. These may not always be recognised by donors.

Two major problems can be observed. The aid donor, and this can also apply to economic and social development programmes (which should be related to disaster response), has to find the answer to the question, ‘How can my help be most valuable in terms of the recipient’s desires and be delivered in a form which, while achieving the most effective help, does not appear to be deterministic or interfering?’ The more donor policies or views, which, though sincere, may be strongly held and are out of harmony with the internal objectives, the greater the difficulty. The other problem is for the government of the disaster-impacted state. It may see what is best to help its communities in a very different light from what seems correct, even humanitarian, from the outside view. Should it hold to its views or be swayed to accept aid irrespective of needs, either to get the aid donors ‘off its back’ as soon as possible, or in the belief that every bit of aid will benefit the general economy, even if not felt to be relevant for disaster relief? Sometimes exaggerated requests for aid have arisen from internal views that aid, even if it exceeds disaster needs, still helps overall development.

The above questions extend far beyond disaster relief. As already indicated, disaster response is a complex and ongoing task. It requires personnel skills, background knowledge and technical and professional services in particular areas of disaster management. It may need specialised equipment. Disaster plans and procedures are necessary, and guidance may be essential to establish them. Improved internal and external communications (including better warning systems) and transport are likely have high priority, while information dissemination and disaster awareness education have a valuable role to play within the community and even at all levels of government. Some of these needs are appreciated in the countries concerned and
assistance in making the necessary improvements (which may require advice or trained or expert help from outside) would be welcome, provided there is no suggestion of outside control or interference. Other such needs may be very apparent to outside observers but have little appeal, or not even be recognised, within a country. Pointing out such gaps in itself may well cause adverse reactions. Receiving opinions that mistakes are being made, or that proper actions have been neglected, does not go down well with the individual, the community nor the state.

It has been pointed out that indigenous communities have a considerable store of knowledge born out of a long period of experience. The view is often expressed (though questioned e.g. by Quarantelli, 1986, p.35) that those on the spot will have a much better understanding of their needs and problems than outsiders, including 'experts'. This is not always the case, but there are many instances when actions or ideas originating outside, though well-intended, have been misconceived. To avoid the dangers of wrong decisions by donors, 'It is necessary therefore to be familiar with the established frameworks and structures and the norms and mores of the impacted social systems' (Britton, 1986a, p.13).

Island communities in the Pacific, an area with a long record of natural disasters in the past, have undoubtedly acquired a reservoir of local knowledge and established traditional methods of organization and patterns for response and recovery built into their community life-style, which have enabled them to survive over many centuries. It is important that the effectiveness of established networks and local leaders should not be undermined. Britton (1986b) has observed that, 'coping mechanisms are often ignored and replaced by more expedient western ways of achieving western aims'. Thaman (1982) and Carter (1987) have noted the possibility that increased central government and international involvement in natural disaster relief and rehabilitation can result in a decline of cultural strategies that can help significantly in this response.

Campbell (1984, pp.61–67) illustrates, in the case of the Fijian islands (especially away from the main island of Viti Levu), the many ways in which food storage techniques (not a simple matter in root crop-dependent societies) can reduce the problem of post-disaster food shortage. Other traditional methods include the maximum use of damaged or blown-down food crops before they rot, back-up crops grown in different ecological areas, and inter-community trade and traditional links providing customary food relief in times of adversity. Taro is likely to provide a mainstay even after a cyclone, but more recently the move to the heavier cropping and more easily cultivated, but more storm-prone, cassava has increased vulnerability. Some similar problems face the choice of cash crops. A severe tropical cyclone can drastically cut copra exports and therefore the chance of farmers earning funds vital for post-disaster recovery. Changes in more recent times have increased vulnerability.

Waddell (1983) provides a cogent example of the failure of external action to take advantage of known indigenous solutions in the case of widespread devastation of crops by severe frost in 1972 in some New Guinea Highland areas. An emergency, but unnecessary, food supply programme was established for up to 150,000 people for eight months. Pacific nation governments could draw on a significant body of indigenous knowledge. Disaster relief, with a considerable external input, is a relatively new phenomenon (as shown in Fiji by Campell, 1984, p. 74–86) and, while no doubt there might well have been more hardship after some severe past disasters, extreme suffering seems to have been avoided. Imports of rice or flour for root-eating islanders, tinned meat or fish where
fishing is carried out around islands (and is still possible after the disaster) may now generate dietary tastes which may well be less healthy, and certainly harmful to the national balance of payments and disrupt local marketing. Understandably, governments are concerned about inappropriate aid where it may contribute to problems they have to deal with later (Johnson, 1987).

A CHANGE OF EMPHASIS IN EXTERNAL DISASTER AID?

So what are appropriate future policies for disaster management? Some go so far as to claim that external assistance is the cause of many disaster situations, as well as contributing to international dissension or to a new form of colonial or capitalist intervention. Pursued to its ultimate conclusion, and in lieu of any cries for help, the implication would be that self-help could be stimulated and former indigenous solutions revived so that developing areas would be able to resolve their own problems. This seems to propose a sink or swim approach, but surely the life-belt is inadequate. In small economies, especially those based on a scatter of tiny, poorly provided for islands, the impact of a single disaster can be more severe than in a larger, compact territory.

The official Australian and New Zealand overseas aid policy tends to be passive so as not to hurt local susceptibilities. This seems to lose opportunities to provide the most valuable aid (not so true of disaster relief) at the most profitable time. There is always the problem that waiting for a state to ask for the 'right' sorts of aid presupposes the potential recipient knows just what is wanted for the particular situation, or what steps should be taken to reduce the future impact of a similar event.

Working on the basis that international, bi-lateral and non-government agencies on balance do a vast amount of good (whilst not denying there are faults), are there ways by which external disaster aid can be made acceptable? From time to time aid has been offered with attached labels (e.g. timing of use, source of purchase), is in kind, is too late, or is duplicated because of inadequate information. In the hurry to deliver aid sometimes priority needs have been inadequately identified. For a long time the criticism of theappropriateness of items of relief aid have surfaced, though with a co-ordinating organization, such as the Australian International Disaster Emergency Committee (IDEC) so far as aid from Australia is concerned, there have been improvements in this area. Problems of inflexibility also arise and it is usually difficult to stop or modify the flow of relief items once it begins.

One solution favoured by recipients in many instances is for aid to be made available in cash, which can then be used in ways local government or non-government organizations consider most appropriate in a changing situation. This of course assumes that the in-country decision-makers have the experience and judgment to select the appropriate strategies and that donors are prepared to accept their assessments. There is a strong argument for the use of cash aid to buy available indigenous food or raw material disaster needs. Where this is possible it helps to reduce the disruptive effect of overseas aid on local economic activities, as well as storage and quarantine problems. Emergency aid such as food, fuel, clothing, tents, and medical services may still be required in kind in many cases. Availability of cash will not always replace the continuing, though possibly reduced, need for outside help.

One cause of possible donor disquiet may be the belief that in small developing states decision-makers have insufficient knowledge to reach the right decisions. This opens the way for a shift in the emphasis of external aid to focus on providing guidance, practical expert skills and knowledge, which can promote disaster response without intruding into local decisions.
The areas at risk and the nature of the different threats could be identified and vulnerability assessments made for each state. This would give governments a comprehensive information base for determining their disaster response strategies. Indeed it has been suggested 'that less emphasis should be placed on material aid being brought in and more emphasis should be placed on informational or knowledge aid' (Quarantelli, 1986).

Awareness of the hazards and improved perception of their significance to a country lead to the recognition of the value of a disaster plan and the setting up of an organization to implement and coordinate the different parts of that plan. Disaster plans have been neglected in most of the countries until recently, but now are being drawn up. It is important that their usefulness should be evaluated, and that they do not remain a piece of paper, untested, unreviewed at regular intervals and unintegrated into a country's general administrative and resource structure. Such plans are needed not only at national but also at provincial and other levels and should encourage, not curb, local initiatives. Advice on how to develop and what to cover in disaster plans, and on what structures are desirable for pre-disaster planning, emergency relief and post-disaster recovery can give valuable help (see Carter, 1984b). Such operational structures can integrate governmental and non-government roles. Realisation of the value of joint, co-operative efforts helps to reduce inter-departmental or inter-ministry jealousies and inter-organizational conflict. Governments still hold beliefs that non-government organizations lack co-ordination and the requisite expertise to undertake disaster response.

Useful external advice can be given on techniques, equipment and current thinking in many specialised areas, for instance on the establishment of the necessary warning systems and effective ways of conveying warnings to all concerned. Advice can help the identification of cash cropping and subsistence farming techniques or the most suitable plant species to assist disaster resilience.

Experience in disaster relief delivery can be shared. This would demonstrate the possible roles for volunteer emergency services and ways in which their activities can be related to those of full-time bodies such as army, police, fire, ambulance and medical services. The provision and distribution of emergency food, clothing, water, and shelter can run into major problems unless careful thought has been directed to possible difficulties and pre-disaster solutions. As part of in-country preparedness, the setting up of warehouses stocked with items, selected on the basis of local knowledge, available for rapid relief delivery in the first few hours, has received attention from non-government organizations concerned with disaster relief. The Seventh Day Adventist Church Development and Relief Agency (ADRA) has already established such stores in some countries (Truscott, 1987). The resolution of these questions is a matter for the individual countries, but a stimulus is needed to consider such matters and guidance on some of the relevant aspects can be helpful. Rapid reconnaissance damage assessment is critical. Help in assembling and analysing the data is needed to achieve smooth delivery of relief. In most cases affected countries have limited capacity to undertake this task. The availability and expert interpretation of low-level aerial photography or even satellite imagery can significantly facilitate a relief programme.

Post-disaster recovery has two stages. Rehabilitation takes place over two or three weeks after the disaster impact. Then often outside help starts to decline and donors quickly shift their attention to new problems. The onus of repairing damage and re-establishing a more stable basis to life, such as rebuilding houses or solving food short-
ages, falls primarily on the devastated country. Demands are great and resources, in particular finance, limited. Some of the problems that can be identified in rebuilding, agricultural replanning, transport and communication restoration can be addressed if help from technical and managerial specialists is available. After cyclone 'Namu' the Solomon Islands established, with outside expert help, a Technical Team to make an accurate assessment of the nature and magnitude of the cyclone impact. It was a highly organized survey lasting 67 days from planning to completion of data processing, and involved 30 supervisors and 60 field teams of 2 or 3 enumerators (Solomon Islands Government, 1986). It produced a very informative analysis which will undoubtedly assist future disaster response management. This sort of survey for recovery planning must be much more precise and comprehensive than the immediate post-impact survey, which has different objectives. A comparable future exercise could still require external skills and funding, but attention is needed to the question of having on hand a digest of standard procedures and reporting forms. The critical aspect is the difference between seeking this by choice, or having it gratuitously adopted in response to pressure from outside.

Looking ahead to the longer term challenges of disaster recovery, it is apparent that recovery and future economic and social development planning share many common concerns. Sensible incorporation of aspects of disaster response into development programmes can significantly assist disaster preparedness and mitigation (Oliver, 1986 p.9). Improved capacity to reduce disaster disruption can protect development achievements from drastic setbacks. In this case a change in the attitude of development aid funding, in particular flexibility of donors’ conditions, is often what is required, so that internal decision-makers can determine their own priorities.

The underlying requirement in indicating areas to which disaster management assistance can be directed, is that help should be advisory and act as a stimulus to internal decision-making, which can be undertaken with a feeling of independence and self-respect, thus avoiding any resistance or objection to external aid. Making such help readily available and providing it when requested by individual states offers a prospect of advancing disaster response in a way which the area under discussion would welcome and feel inclined to profit by. Over time the desired outcome is increased capacity to cope with disaster events and reduced reliance on outside help.

In a seminar on Regional Disaster Preparedness held at the Australian Counter Disaster College, Macedon, Victoria (1981), one clearly identified objective was that of ‘training the trainer’. The latter should preferably be a national of the individual state. The Pacific states suffer from a dearth of trained and experienced personnel in disaster management skills. Development of the infrastructure for in-country training, appropriately modified to relate to each individual country’s needs and to be compatible with its disaster plan, would make a major contribution. As an example, in January 1987 following the effects of cyclone ‘Namu’ in the Solomon Islands, the Development Trust planned the establishment of a three weeks’ training programme for persons drawn from the different provinces. The plan was to develop an understanding of disaster awareness needs and of methods villagers could use to prepare for and deal with natural disasters. In the second quarter of 1987, mobile teams sent out by the Trust conducted 190 Disaster Awareness and Development Workshops over eight Provinces.

Introducing a Solomon Islands Government National Seminar in Disaster Preparedness and Planning Needs (1987),
the Minister of Home Affairs and Provincial Government advanced the idea of a National Disaster Corps of 500 citizens drawn from all parts of the country, which would provide a disciplined group able to assist in the event of disaster. The members would be trained to assist in assessments of both immediate relief and longer-term rehabilitation needs, to administer elementary first aid, distribute relief and other supplies and lead community discussion groups on disaster response. A Corps of 500 volunteers would enable each member to have responsibility for about 100 households.

The Australian Overseas Disaster Response Organisation and the Australian Red Cross Society, with funding from the Australian International Development Assistance Bureau, have in recent years organised a series of in-country ‘Disaster Preparedness Workshops for Non-governmental Organisations’ (Vanuatu and the Solomon Islands in 1985, Western Samoa in 1986, Fiji and Tonga in 1987, and Papua New Guinea in 1988). A small training group from AODRO/ARCS has introduced general disaster response concepts for the in-country participants in the workshops, drawn largely from non-government organizations. The subsequent workshop discussions have sharpened the interest in disaster response and what needs to be done locally. This type of activity also seems to offer a profitable model for state governments to pursue on behalf of those of their staff with disaster planning or management roles. They can feel that they have the controlling say in what they consider most appropriate for their national objectives.

Within-country disaster response can profit from maximum co-operative interaction between all the levels of government (national to local), as well as greater mutual respect between local non-government organizations and the government. Intra-regional co-operation affords another opportunity to set up advisory and helping structures. The first Disaster Preparedness and Relief Seminar (supported by UNDRO, the League of Red Cross Societies and the Government of Fiji) was in 1976. In August 1983 the South Pacific Forum resolved to extend the mandate of its Secretariat, the South Pacific Bureau for Economic Cooperation, to include disaster preparedness and to appoint a Regional Disaster Adviser, although this position no longer exists. The International Foundation for the Peoples of the South Pacific has established ‘grass roots’ networks to raise the level of community awareness and to stimulate help from community leaders and local media. This level of response can be quite critical where in the immediate post-disaster days communications and logistic problems impede and delay the arrival of outside help. Another development, with potential regional value, is the establishment in January 1986 of the Asian Disaster Preparedness Centre on the campus of the Asian Institute of Technology, aiming to provide training for officials holding key positions in natural disaster management, although its focus is chiefly on Asia, rather than the Pacific. At the same time, the foundation of the Tropical Cyclone Committee of the South Pacific offers a substantial contribution, specifically in improving the cyclone warning system, in which already the Tropical Cyclone Warning Centres at Nadi and Brisbane play a major role. The type of co-operation discussed above is another form of self-help. It permits the contribution of expert advice and other forms of external help to be sought, as perceived to be desirable, from within the region.

Community education is needed to stimulate disaster awareness and understanding, and to provide a simple guide on necessary response actions by any threatened community, whatever the assumed level of socio-economic sophistication (Johnson, 1988). In 1985 a workshop (AODRO, 1985) in Honiara, Solomon
Islands recommended a National Disaster Week, with local NGOs playing an active role in promoting community disaster awareness and response. The idea was represented as a National Disaster Preparedness Day at the 1987 Seminar (Solomon Islands Government, 1987). At a 1987 workshop in Suva (AODRO, 1987), the Minister for Home Affairs also proposed a similar annual National Disaster Awareness Week.

CONCLUSION

Theoretical concepts of desirable patterns of disaster aid to Third World countries serve little purpose unless they can be explained and promoted in the countries to which aid is given. First, there a ‘translation’ task that will permit potential recipients to judge the appropriateness and value of the various forms of advice or material aid on offer, or the ways they feel they are related to their own disaster response and management programme. Secondly, implementation of this assistance should be decided upon willingly by the recipient, without any hint of pressure or feeling that there is a hidden agenda believed to represent donor self-interest.

International relationships take place within a complex political framework. This is particularly true in the Pacific region for both disaster and development aid. Competition between different power blocks establishes underlying conditions favouring ways by which one group feels it may gain an advantage over another. Unfortunately there is the danger, and indeed at times the reality, that disaster aid is used as a means to serve other ends. As indicated already, national sensitivities are particularly alive to this possibility. It is essential that this potential hindrance to achieving the ideal disaster response is recognised by donors. Likewise, since disasters are not an occurrence with a high frequency or regularity, their priority within the individual countries for attention and allocation of resources is often low, showing short-lived surges after a disaster. Development assumes a greater importance and disaster response is often not felt to have much relevance to it. In fact, development and disaster planning and aid should be looked on as a combined operation. In the resource-deficient Pacific island states, counter-disaster activities are likely to be starved of funding and personnel, so that aspirations have to be pruned. The continuity of attention to the whole spectrum of disaster planning and management is weakened, and the vulnerability to internal power and status rivalry accentuated.

The prospect of external bodies encouraging the adoption of the desirable ways of providing skills and means to improve indigenous disaster planning and management capabilities may fall far short of the ideal. Changing this outlook will not be achieved quickly. Even if some success is achieved at top national levels, there is no guarantee that the organization will extend to provincial or local levels, which often suffer poor communications between scattered islands, a particular problem in the emergency phase. Without giving up efforts to improve the response or losing heart, we may still have to accept slow progress and a large, possibly widening, gap between theory and practice.

The viewpoint presented in this paper is that external disaster aid donors should re-examine the emphasis of their activities, so as to focus primarily upon the promotion of and assistance for a self-help approach in disaster response. This policy would anticipate a progressive decline in material emergency aid from external sources. The main thrust of overseas disaster aid would shift to developing the inclination and capabilities of the Pacific island states to establish their own disaster response strategies. Expert guidance and training with the help of aid donors would result in the setting up and strengthening of internal government
and other counter-disaster organizations, which would be capable of making decisions on the type and timing of required aid. For several of the island states there will continue to be a need for financial assistance in cases of disaster, but the aim would be for this to be on a more considered basis, reducing, as far as circumstances permitted, the emergency ad hoc character of such help.

The argument presented here is not for the cessation of counter-disaster help through international agency, government or non-governmental channels. For the smallest nations this is likely to be a persisting need. Particularly in view of the fact that disaster planning is dynamic, with vulnerability and other aspects changing over time, in some form it may well be needed for some time yet for other states also. Additionally, donors should attempt to improve the local understanding of the motives prompting their aid activities. The words of Mr Ralph Wari (1986, p. 3), Cultural Adviser of UNESCO for the Pacific States, deserve attention: ‘The aid donor ought to play a role of facilitator and not the good samaritan’. Facilitation is envisaged here as help through relevant advice and provision of skilled personnel when required.

Carter (1987) backs this up, emphasising that, in disaster preparedness, overseas help should stimulate initiative by governments or non-government organizations in a country, ‘not provide a substitute for lack of action’. This view can be matched by that of the Deputy Prime Minister of the Solomon Islands opening the 1985 Disaster Preparedness Workshop, ‘We should not be relying on foreign organizations to help us, but should be asking them to educate us on how to prepare ourselves and how to make best use of our traditional ways of sharing and giving to others who are in need’.

References


John Oliver
Department of Geographical Sciences
University of Queensland
St. Lucia
Brisbane
Australia
This paper focuses on the housing conditions of the displaced people who were forced to move to West Beirut due to the conflict in Lebanon which started in 1975. With the lack of any emergency housing provision, people have adopted two ways to shelter their families; either by occupying vacant buildings or by squatting on unused land (land squatting).

The study is based on fieldwork undertaken in order to gain a deeper insight into the displaced people’s housing conditions. The results of the survey analysis are believed to be common to other displaced people, as has been verified by comparison with the available information in newspaper reports, unpublished documents, and other accounts.

The paper concludes with a reconstruction strategy, composed of two policies. First, a short-term policy which deals with the urgent needs of the people in the place of refuge. Thus mitigation and risk reduction are the aims of this policy. Second, a long-term policy which concentrates on future housing reconstruction; in which economic development, social integration and cultural identity are the basic features.

INTRODUCTION
The Lebanese civil war is the result of disagreement between the two main communities — Muslim and Christian — on certain fundamental domestic issues: economic and development inequalities, national identity, the power of the presidency, parliamentary representation, and so on. This conflict has, with time, been complicated and exploited by many external forces which have become dominant. All these have forced a large number of people to move, sometimes more than once, from one area to another for security, and for religious and political reasons. These forced movements created the problem of homelessness among the displaced people and deepened the schism between the two communities. At the national level, all communities in Lebanon have suffered from this problem and from the hostilities of the conflict.

THE HOUSING SITUATION IN BEIRUT

Before the Civil War (1975)
Beirut faced a housing crisis of grave proportions due to rapid urbanization accelerated by unexpected economic growth, external political events (refugees) and rural-urban migration. In addition to rapid urbanization, the dominance of the private sector and government attitude (Laissez Faire) reflected negatively on the building sector, which was characterized by an oversupply of luxury apartments and office buildings and gross neglect of
housing for low and middle income groups. As a result, 20,000 luxury dwelling units were vacant in Beirut in 1971 (UN, 1971: 81). On the other hand, the emergence of squatter settlements on the periphery of the capital, the 'misery belt', was a clear response by the poor in dealing with the situation and a sign of the failure of the housing market.

During the Civil War

With the outbreak of the conflict, the housing situation has become more problematic due to the hostilities and the destructive effects of the war. At the beginning of the conflict, the city came to be divided into two parts: the East dominated by Christians and the West controlled by Muslims (Fig. 1). This division has been reinforced throughout the past fourteen years for a variety of political reasons. The division of the city began with the huge damage inflicted on the commercial centre, 'the historic core', during the first two years (1975–76). During and after this period the Damascus–Beirut road began to emerge as a symbol of division, 'the Green Line', between the two parts of the city. Thus the city has lost its urban unity and the only connection between the two parts are the five crossing points along the Green Line. However, these points have closed and opened according to the military actions and agreements among the various factions.

The war and the division of the city resulted in three major factors which have intensified the housing crisis. Firstly, the destruction of the town centre resulted in commercial and business activities moving to residential areas (decentralization). Secondly, huge destruction was inflicted on the housing stock; there were 60,000 housing units partially damaged or completely destroyed in Lebanon in the period 1975–82, of which 30,000 were in Beirut (Georgi, 1982: 32). However, the renewed fighting since 1982 has brought further waves of destruction to houses and properties, but more recent estimates are not available. Thirdly, people abandoned the dangerous residential areas along the Green Line, which are considered as a military zone.

All these factors, as well as insecurity and inflation, have increased the price of and demand for housing in safer areas, and pushed up the price of land and housing units to the extent that it has become practically impossible for many middle and low income groups to find suitable dwellings.

POPULATION DISPLACEMENTS

All the different disputes which have torn Lebanon apart since 1975, resulted in the forcible displacement of a large number of the inhabitants. These forced migrations not
only took place between the two parts of the capital, but also between the capital and other Lebanese regions. As a result, different religious communities come to be isolated in well defined ‘cantons’. It is remarkable that the number of people who migrated to the capital, especially to the Western part, exceeds by far the number who left it. This is for two main reasons: concerning the first ‘although clashes were fiercest in the city, people still chose to migrate to it from the countryside. The reason for this puzzling situation is that there was a balance between the fighting groups in Beirut, but not elsewhere; consequently, small clashes in the countryside seem to have generated more lasting effects of migration than in the city’ (Toubi, 1980: 104). The second reason concerns the military intervention of Israel in the South of Lebanon, which pushed waves of Muslim people of rural-farming background northwards into West Beirut.

The result of these movements on the two parts of Beirut can be summarized in Table 1, which demonstrates that East Beirut has more or less preserved its numerical size; whereas West Beirut came to be considerably inflated by 235,000 persons arriving from East Beirut and the South of Lebanon.

It is very difficult to draw a clear picture of the pattern of displacements, because the majority of displaced people have moved several times between the capital and other Lebanese regions or within West Beirut. This is due to the phases of upheaval and peace between the various armed groups.

All sources of information reveal that the majority of displaced people are of low income. For this reason, it has been very difficult or practically impossible for them to purchase or to rent a dwelling within the prevailing housing situation. So, how did these people shelter their families?

SHELTER PROVISION AFTER DISPLACEMENT

With the lack of any organized emergency housing provision and under the pressure of need for shelter, the displaced people in West Beirut have adopted one of two tactics: squatting on vacant land and building a house progressively, or occupying vacant buildings which already exist. There is no hard information about why people have chosen one way rather than the other, but it seems that this depends mainly on the time displacement occurred, the militia in control of the area of refuge and the opportunity to squat on virgin land or to occupy a vacant building. It should be mentioned that the two practices are not influenced by sectarianism. This means that displaced people in West Beirut sought refuge without taking into consideration the religion of the owners. In both cases opportunists have taken advantage of the disorder for free accommodation or speculation. Generally, such things are sanctioned by local militia.

Table 1
The number of displaced people in the two parts of Beirut

<table>
<thead>
<tr>
<th>Direction</th>
<th>Beirut East and Suburbs</th>
<th>Beirut West and Suburbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outgoing</td>
<td>110,000</td>
<td>75,000</td>
</tr>
<tr>
<td>Incoming</td>
<td>125,000</td>
<td>340,000</td>
</tr>
<tr>
<td>Increase</td>
<td>15,000</td>
<td>235,000</td>
</tr>
</tbody>
</table>


Land Squatting

Land squatting in West Beirut was already taking place before the civil war, due to the difficult housing situation. It is presently found mainly in four large and distinct agglomerations: Raml al-Aali, al-Uzai, Jinah and Bir Hassan (Figure 1). The proliferation of these settlements has increased with the
homelessness among displaced people. Spontaneous building activity in recent years has extended to the perimeter of Beirut airport in al-Uzai and Raml al-Aali. Most housing reconstruction in these areas is of one or two stories (Figure 2). Housing units tend to be small and overcrowded. Roads and alleyways are narrow and there is a lack of proper infrastructure, open spaces and social facilities. The land in these areas is predominantly privately owned. According to the Ministry of Social Affairs, the total number of households living in these areas is about 10,000, with an average of 7 to 8 persons per household (CDR, 1983: 2). This gives a population of between 70,000 and 80,000 persons. These figures represent the total number of squatters on land in West Beirut before and during the war, of which 71% have been established since the outbreak of the conflict in 1975 (Issa, 1981: 8).

Occupation of Vacant Buildings

The phenomenon of occupying vacated buildings appeared for the first time in 1975–76, and involved the 'invasion' of vacant flats, hotels, offices, etc. by families fleeing the effects of the war. Of course, with the market over-supply of luxury flats and offices, thousands were vacant and unsold. Other displaced people sought refuge in schools, or even in damaged buildings. However, the occupation of these buildings happened in a casual way; no organized methods were adopted, even on the few occasions when militia or local relief organizations were involved in sheltering the displaced people.

Presently, occupation of vacant buildings is found mainly in West Beirut, with the heaviest concentration in Raousheh, al-Hamra, Ramlet al-Baida (luxury apartments and office buildings) (Figure 3) and the
grand hotels areas, Bab Idriss, Wadi Abu Jmil and near the town centre (damaged buildings and dangerous areas). Isolated examples of the occupation of vacated buildings exist everywhere in West Beirut (Figure 4).

The overwhelming majority of these buildings have been occupied in their entirety. But some examples exist where displaced people occupied a part of a building while the other part is still functioning normally as a school or a public institution.

No exact information is available about the number of people occupying vacated buildings, but estimates suggest that there are between 4,000 and 15,000 households. This translates into a population of between 30,000 and 105,000 in which the average size of household is about 7 persons (CDR, 1983: 5).

THE SURVEY

The author conducted a survey, in August and September 1987, to investigate the
displaced people’s housing conditions, and to reflect their view of their immediate needs and future housing reconstruction. The tense military atmosphere limited the survey in number (30 households) and in area (West Beirut) for practical and security reasons. The survey is a qualitative one of a population of 210 persons; its representativeness was ensured by spreading the fieldwork in the main areas of displaced people in West Beirut (Figure 1). The case studies were chosen by visiting these areas and selecting by chance some households willing to be interviewed. In this regard the sample is a type of ‘snowball’ one (Burgess, 1984: 55).

A questionnaire was prepared for the survey, but it was found that most people are afraid to answer a rigid and direct form of questions due to their illegal situation. However, conversation which followed the structure of the questionnaire made people more relaxed and co-operative. The questionnaire which was used as a guide during the interview covered the following areas:

- Population characteristics: number of times moved, household size and structure, type of work, monthly income and expenditure.
- Physical characteristics of the dwelling, including infrastructure: provisions and problems, and the size, space usage, conditions and materials of the dwelling.
- Social conditions and expectations, covering constraints and difficulties associated with displacement, and housing priority and expectation in future reconstruction.

The survey was supported with four in-depth case studies as well as observations and photographs. The analysis of the survey combined the two types of the squatting. This is because shared characteristics are dominant, and the population
exhibits similar socio-economic profiles and similar reasons for displacement. However, the distinctive features of each type will be identified. A summary of the survey findings can be classified under three headings, discussed below.

Population Characteristics

- The sample shows that displaced people have high residential mobility, 63% of the sample moved two or three times and 23% moved between four and seven times because of the war. Many problems and changes emerged from displacements, such as the loss of furniture and jobs, and the creation of an unstable and insecure situation which is governed by military actions.
- The incomes of the people are very low, depending on irregular manual jobs. Priority expenditure is on food.
- The population is generally young (72% of the sample between 0 and 24) and consists of large households (seven persons/household) with high dependency ratio (43% under the age of 14) and equal sex ratio (100 males to 102 females).

Dwelling Physical Characteristics

- The dwellings are smaller than the household sizes might suggest. The survey shows that 70% of the dwellings are one or two-roomed dwellings, while the majority of household sizes are between 7 and 13 persons/household (63% of the sample). Thus a high occupancy rate (3.3 persons/room) is a characteristic of the housing conditions, which reflects the overcrowding and lack of privacy especially in occupied buildings (one-room dwellings are limited to this type).
- The lack of proper infrastructure (water supply, sanitation and refuse collection) increases the incidence of health hazards and disabling diseases. Two points should be mentioned: firstly shared toilets exist only in the case of occupied buildings (offices, schools), which usually have common facilities for the whole floor. Secondly, many dwellings on squatted land use pit latrines and wells, in areas far from the main streets, due to the cost and difficulty of connection to the public infrastructure. Consequently there is a risk of water contamination.
- People living in damaged occupied buildings are in real danger from collapse. Moreover, the situation is deteriorating with water penetration and the lack of safety measures — handrails to staircases, fire protection, etc. (Figures 5 and 6). In the case of land squatting, some households are living in dwellings made from scrap materials (Figure 7).

Social Constraints and Expectations

- The diverse social problems are mainly related to the lack of privacy, shared toilets and adjustment to the new environment, especially for the people of rural background.
- Additionally, the people expect support from the government to enable them to overcome some of their problems. On the other hand, they would prefer to return to their original areas after the settlement of the political situation, with the expectation of assistance and help in rebuilding their houses.

A HOUSING RECONSTRUCTION IN LEBANON

In 1977, the government established the Council for Development and Reconstruction (CDR). It was guaranteed unprecedented power in decision-making, management and financial matters. Thus, it could be the only institution able to implement a housing reconstruction programme; its role, as the author sees it, could be as follows:

- To coordinate the efforts of local and...
FIGURE 6  Squatting in a damaged building: the missing handrail is a risk especially for children (Bir Hassan).

FIGURE 7  An example of a dwelling built from scrap materials in a land squatting area (al-Uzai).
international relief organizations, according to identified priorities based on the people’s needs.

— To provide people with technical assistance.
— To organize people into groups as a prerequisite for effective action.

The situation in Lebanon is a man-made and continuing disaster. Therefore, comprehensive housing reconstruction, based on an analysis of the survey findings and on the available information about the issue, could be divided into two: short and long-term policies.

**Short-term Policy**

This is aimed at supporting the displaced people in their place of refuge. This policy is not expected to solve all the problems but to reduce vulnerability and to ease the difficulties until the settlement of the political situation. The bases of this policy are as follow.

Future reconstruction will require an expanded active labour force. Therefore, it is vital that the issues of health and risks related to housing be addressed.

Supporting the displaced people does not mean legitimizing their ‘illegal’ occupation of land or buildings; rather within the de facto situation it would be better to reach an agreement between landlords and displaced people. Agreement with landlords could be in the form of tax relief, soft loans for future development or improvement in infrastructure projects. However, these issues should be the subject of more investigation and discussion among the different groups.

In the prevailing situation, the approach of supporting people in the place of refuge is still more reasonable than building new houses. Building new houses would also have to deal with problems such as land, finance, infrastructure, etc. Also this approach might discourage people from returning to their places of origin in the future and deepen the segregation between the communities.

People’s participation is crucial in minimizing mistakes and promoting care for the facilities provided. Moreover, some of the labouring work could be done by the people, for which they would be paid. In this way, work will be generated for the communities and the benefit will be doubled; especially since the majority of the people are working in irregular jobs.

We can identify the following areas in which support could be beneficial in the short term:

— Preventing health hazards. This could be achieved by periodical spraying, by encouraging people to use plastic bags and by providing safe communal refuse collection within a reasonable distance. Similarly, sanitation could be improved by repairing blocked or damaged pipes (in the case of occupied buildings) and assisting people in building pit latrines to avoid water contamination of wells (in land squatting areas). Water supply could be improved by the provision of communal water stand pipes in the needed areas and by ensuring regular maintenance.
— Reducing vulnerability. This could be achieved by ensuring safe construction methods and consolidating the physical conditions of the deteriorating dwellings in the case of land squatting. Walls and supports should be built to prevent the collapse of damaged buildings, which should be protected from water penetration and leakage. To protect children, disabled and elderly people, missing handrails or balustrades should be fixed around holes — in damaged buildings and in dangerous areas.
— Social support. This could be promoted by organising people into groups according to their localities, in order to facilitate their participation in the
reconstruction strategy. A good knowledge of social patterns, norms and traditions is essential. Provision of schools, books and uniforms for the children, may decrease delinquency and the illiteracy rate.

These measures under the short-term policy are considered as a mitigation or a risk reduction. ‘These terms are used interchangeably to describe actions taken to reduce the risks to lives and property and disruption from natural or man-made hazard, either by reducing vulnerability or modifying the hazard’ (Davis, 1987: 70).

Long-term Policy

The long-term policy should encourage and help people to return to their original areas. This encouragement includes the provision of work opportunities, infrastructure, education and social facilities. Help should consist of the provision of technical and financial assistance which would enable them to rebuild their houses. The bases of this policy are:

— The ‘social good will’ which has proved to be very high. The survey showed that people are willing to return to their areas of origin. This was confirmed during the opportunities presented by phases of peace (1977, 1983).

— The government has the right to protect private property but it also has the responsibility to find alternatives to rehouse displaced people.

— The promotion of cultural values and identity as well as the careful consideration of environmental issues.

— The return of people to rural areas will help in the development of the agricultural sector, which has suffered from the lack of a labour force. Therefore, equitable development for the different sectors of the economy should guide the reconstruction strategy.

— The use of appropriate technology which is based on local skills and materials in order to minimize the dependency on imported and expensive products.

— Popular participation and self management, to minimize bureaucratic procedures and to ensure that the people’s needs will be met.

Regarding the practicality of returning displaced people to their original houses we can identify three categories:

First, people in occupied buildings and squatting on land, who are able and willing to return to their homes — especially to villages. In this case the previous bases are the guidelines for the reconstruction process.

Second, people squatting on land, who cannot return to their former houses, especially in Beirut, because other developments have taken place in the areas of origin. In this case, upgrading of the squatted areas and integration within the urban fabric could be the model for the reconstruction programme.

Third, people in occupied buildings, who are not able to return to their houses. In this case, two alternatives could be adopted. The first is that some of the people could be moved to the available evacuated dwellings on squatted land after the upgrading programme. Alternatively, the rest of the people can be provided with housing by following the approach of core units, or a combination of site and services, which could be efficient in this case. Improving the housing conditions or rehousing the displaced people needs detailed statistical information. In 1982, it was estimated that the cost would be $2 million and that it would take at least two and a half years (Al-Safir, 1983). Moreover, it is important for the government to reach a final agreement with landlords over land acquisition. Upgrading, core units, and site and services schemes result in an increase in land value and speculation in the absence of careful planning and control.
CONCLUSION

Housing reconstruction after a disaster is a very sensitive and urgent issue. The sensitivity arises because a house is not only a shelter from natural elements but also a shelter for social, spiritual and psychological needs. The house is essentially a family place and a cultural expression; it is a 'home'. The urgency of the issue arises because housing reconstruction requires substantial financial, human and industrial resources which can have positive effects on the economy and the development of the country.

Differences and disputes among the Lebanese people as well as the prevailing tense political atmosphere in the Middle East have torn Lebanon apart, and violence and disorder have been the prevailing characteristics for over fourteen years. During this period of upheaval, Lebanon has gained two golden opportunities (in 1977 and 1983) when new hopes arose of putting the country on the path to peace again, but it seems that time was not ripe. The reconstruction issue is completely dependent on the resolution of the political conflict.

Physical reconstruction should help in healing the social division, which is the more difficult task. When the third opportunity comes, hopefully it will be seized. Reconstruction, which will lay down the foundation of a ‘New Lebanon’, should respond to people’s aspirations, cultural values and economic potential. Perhaps in this way the crisis could be turned into an 'opportunity'.

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Souheil El-Masri
Centre for Architectural Research and Development Overseas (CARDO)
University of Newcastle upon Tyne
NE1 7RU
Despite the frequency with which disasters occur, very few if any third world countries have developed elaborate disaster mitigation networks. Most commonly, governments in these countries focus their attention on disaster relief rather than disaster mitigation and preparedness. It is the contention of this paper that apart from the political and economic instability which will result from government apathy, lack of sensitivity to the question of disasters and disaster preparedness will result in untold suffering for the millions of our people who live on the urban margins and who are the most exposed to the dangers of disasters. This paper is about disasters and disaster response in Zambia.

INTRODUCTION

Disasters can be defined as the interface between hazards — whether natural or man-made — and vulnerable conditions (Davis, 1987: 8).

Year in and year out we have continued to have heavy rains, which have resulted in flooding of some of the squatter settlements, due to their vulnerable locations. This has meant continued loss of property and of structures which have been unable to withstand the combined force of torrential rains and whirlwinds. But none of this damage can match the devastation of houses, property and crops which occurred on a nationwide scale between January and March 1989, as a result of continuous heavy rains which left about 50,000 people homeless in Lusaka alone (Zambia Daily Mail, 13 February 1989).

HANDOUTS AS USUAL

In the wake of the unprecedented heavy rains and their attendant floods, which affected many parts of the country and which left multitudes of people homeless, two dead, and property and crops worth millions of dollars damaged, a relief machinery was hastily put together for the purpose of coordinating relief measures. As during the Kanyama disaster of 1977, the response to the catastrophe was overwhelming. If any organisations were reluctant to respond to the distress call, then it is certainly because the Kanyama disaster fund scandal of 1977 still lingers in their memories. And who would blame them? All the same the central government released funds to help the flood victims. Other organisations too joined the bandwagon and helped in one way or another.
The Lusaka Catholic Archdiocese and Viginto Company donated $1,250 and $625 respectively (Zambia Daily Mail, 13 February 1989). The Amanda Marga Mission Worldwide set up a relief team and distributed food, blankets and medicines to the flood victims. It also released $18,500 for relief work, and mobilised doctors and nurses to attend to victims (Times of Zambia 15, 20 February 1989). The Lusaka Muslim Society donated $15,625 to help people left homeless by the floods in Lusaka. The Chairman of the Society, Yousuf Dalal, said that the society was also willing to assist in buying requirements like food, clothing and building materials and supplying them to the needy (Zambia Daily Mail, 17 February 1989). In Gwembe, the council appealed to the Party and its government to provide Airforce helicopters to help transport $437,250 worth of food to more than 10,000 hunger-stricken villagers. The District Political Secretary, Mosford Moonde, said the situation was very serious and the only possible way to transport food to the area was by air, since most of the bridges had been washed away by the rains (Times of Zambia, 20 February 1989). The Zambia Red Cross Society announced it was mobilising assistance for thousands of flood victims, including hunger-stricken Gweme villagers. Secretary General Chupo said the Society was working in conjunction with other welfare organisations to map out a common strategy for the relief exercise. Medicines, food, building implements and clothing were some of the items that the flood victims would be given. He said the Society had sent a list to the Norwegian Agency for International Cooperation (NORAID) which included an assortment of drugs (Times of Zambia, 23 February 1989). NORAID Deputy representative, Cisten Glommi, said the agency was ready to help the flood victims, but had not been approached officially by the Zambian Government. Only voluntary organisations had made requests, including the Red Cross (Zambia Daily Mail, 7 March 1989). Red Cross Society Youth Officer, Teddy Zulu, disclosed that 35 tents, second hand clothes, and pots, with a total value of $13,818, had been bought to help the 1,200 people left homeless in Maama (Zambia Daily Mail, 7 March 1989).

RECRIMINATIONS

As confusion reigned, everyone tried to blame everyone else for the disaster. Observers pointed to the government’s lack of firm control in monitoring the construction of houses in townships as the main reason for the tragedy. Most of the homes were said to be sub-standard and unable to withstand strong winds and heavy rains (Times of Zambia, 6 February 1989). Nick Money, the Director of the Geological Survey, said many building contractors and architects in Zambia were getting away with shoddy work because the law does not compel them to guarantee the structures they put up. The License System is so loose that an unqualified person can become a building contractor or architect. Licensing authorities should insist that for one to be a contractor he must employ qualified engineers and geologists. People seek the services of building contractors because they believe they know more than them, yet these people know nothing about geology. He also said that there was a need to enact a law which would compel contractors and architects to guarantee a minimum of ten years in which buildings should not collapse under heavy rain, pointing out that such guarantees are given to tenants in Britain, West Germany, France and the USA. If the buildings collapsed, occupants would sue the contractor. While this law does not exist
in Zambia it is wise for contractors, architects and councils to employ geologists who know the local ground conditions. A large area of Lusaka is built on limestone and dolomite, which can dissolve in water that is mixed with acid. There is also a need to consult geologists when constructing roads. Nick Money is further reported as saying that it is not only the poor people in the urban areas who are vulnerable to disaster, but those living in good modern houses. He stressed the importance of maintaining vegetation, because that absorbs water from underground, but the situation regarding trees in Lusaka was pitiful. He observed that Lusaka does not have many underground rivers to absorb the water from the continuous rainfall (Times of Zambia, 12 February 1989).

Reacting to Money’s views, the Chairman of the Zambia Institute of Architects exonerated his members by saying that the root cause of recent damage to houses and roads in Lusaka during the heavy rainfall was inadequate storm water drains and not the alleged failure by architects and contractors to employ geologists. According to him the solution lay in having a comprehensive system of storm-water drains for urban areas. This would reduce the effect of sub-

FIGURE 1 Provincial Map of Zambia
soil water on the foundation of structures. Architects do not design foundations of any structural elements for buildings higher than one floor. For these services, structural engineers are appointed as fellow Consultants. Soil testing would be carried out by specialists with required skilled manpower as well as laboratories. He concludes that 'The logistics of such a set-up make the suggestion for architects and contractors to have a geologist on the staff absurd. The situation is the same for roads' (Sunday Times of Zambia, 5 March 1989).

Very little attention has been given to the problem of disasters and disaster planning by both the central and local government, and yet this is a major problem which is now recurring with increasing frequency, as the urban poor find it difficult to build stronger homes. This is a result of adverse economic conditions, which have been manifested in reduced purchasing power and the exorbitant prices of building materials due to inflation. Even materials that were previously salvaged from building sites are no longer available, due to the decline of the construction industry and as construction companies institute cost-saving measures to eliminate waste (Mulwanda, 1989:10).

Despite the fact that in 1972, government policy in the Second National Development Plan (SNDP) was that these squatter settlements had to be upgraded instead of being demolished, and despite the fact that this policy was reaffirmed in the Third and Fourth National Development Plans (TNDP and FNDP), dislocation is still a real source of worry for the urban marginals. The net effect of this threat of eviction is that the occupants of these squatter settlements are discouraged from substantial investment in home improvement, thus perpetuating the ramshackle appearance of the houses in the squatter settlements. Left with no alternative, the residents of the settlements invest all their savings in durable consumer goods which can be salvaged when demolition occurs (Mulwanda, 1988: 2).

The illegality of these squatter settlements, which places them outside the jurisdiction of district councils, means that no services or infrastructure are extended to them. Squatters remain outcasts and a deprived class in the midst of plenty. They continue to live in crowded shacks, irregularly spaced along narrow, winding, uneven dirt paths — a continuous source of embarrassment to both the central and local governments, but more realistically, a manifestation of the unequal distribution of wealth in a land where the rich get richer and poor get poorer. But these urban marginals are a potential time bomb, and in the interests of social, political and economic stability, there must be a re-thinking on the part of the authorities concerning these unfortunate souls.

THE NEED FOR AN INSTITUTIONALISED DISASTER MITIGATION SYSTEM

In view of the above, it is obvious that there is a need for preventive action against the elements. Disasters cannot always be prevented but their effects can almost always be mitigated. The science of disaster management involves systematic observation and analysis of measures relating to disaster prevention, mitigation, preparedness, emergency response, rehabilitation and reconstruction. In practice, disaster management seeks to save lives and diminish damage to property threatened by disasters; improve the effectiveness of emergency operations; and to facilitate the rapid re-establishment and improvement of social, economic, and environmental systems after a disaster (UNDRO News, September—October 1987: 20). In short, risk reduction measures should be considered as an integral part of development plans. It follows that such measures should be incorporated in all environmental, land use,
and site selection plans at the national, regional and local levels. The aim of planning, therefore, should be a gradual and balanced shift in emphasis from post disaster relief to disaster mitigation, based on a better understanding by politicians, decision-makers, planners and all sectors of the community, of the underlying causes of disasters. There are certain crucial requirements and mechanisms for effective implementation of disaster management programmes:

— Public awareness and education is essential and it can be achieved through the use of educational institutions, starting from the primary school level right through to the highest educational levels. Here you disseminate information on the effects of natural disasters and the methods of protection against them. The task of promoting a national consciousness of, and an active interest in, disaster prevention and preparedness falls on the government with the co-operation of all relevant authorities, including NGOs.

— After a disaster strikes, a long term programme is likely to be necessary to prevent the recurrence of similar disasters in the future. Training programmes, therefore, should be given high priority in order to gradually build up the capacity of the people at all levels to help themselves, especially during the period immediately following the disaster.

— Research and development is an important component of disaster management and governments therefore must support adequate research and development programmes. It is also important that managers of disasters be trained in risk analysis, early warning and information diffusion, and relief operations. The idea is to give them the tools necessary to conduct training programmes for the communities most exposed to disasters.

— A legal framework is essential for disaster management because it establishes safety standards. But this requires an adequate system to enforce laws, because lack of such a system will result in legal controls losing their essential public respect.

— In addition to the above, there is a need for resources to be made available; no disaster mitigation strategy can be accomplished otherwise. While it is recognised that the scarce resources are being competed for by many agencies and government departments, disaster mitigation must be favoured, because its impact might affect even the political and economic stability of a nation.

IMPLEMENTING DISASTER MITIGATION WITHIN SQUATTER SETTLEMENTS

While there is a need to strengthen the legal framework, so that safety standards are adhered to, consideration should be given to the urban poor when administering standards of buildings enshrined in law, taking economic limitations into account. Demolition of houses in a situation of real shortage is self-defeating. To activate the residents of marginal settlements, cash incentives may induce individual families or even communities to adopt disaster resistant techniques. This strategy may be far more appropriate than laws for the residents of marginal settlements. Incentives can include cash grants or low interest loans to family units to make their homes more resistant to high winds, torrential rains and floods. In the words of Press, “History will judge governments not only by their attention to health, education and economic growth but also by preparing their countries in advance of national disasters” (Press, 1987: 6). The output of an effectively implemented risk-reduction strategy is protected lives and property, increased local self-reliance, and an educated population able to plan itself to reduce its vulnerability to future disasters (Davis, 1987: 14).
WHERE DO WE GO FROM HERE?

Any risk assessment of disaster-prone cities reveals that the normal pattern is for governments to pay minimum attention to the issue of public safety in squatter settlements. The notable exception to this rule is obviously in the period immediately after a disaster, when the minds of the politicians are temporarily focussed on the issue (Davis, 1987: 11). But are we going to continue with a situation where the state and related agencies will only be active during the period of stress, only to revert to the normal rhythm after the state of tension has been temporarily removed? If we are going to safeguard lives and property there is a need for preventive action against the elements. This implies that emphasis must be placed on disaster mitigation rather than post disaster relief, as has been the trend in the past. To achieve this there is a need for an institutionalised national disaster mitigation network.

References


Cross-border relief operations to non-government controlled regions of Eritrea and Tigray have been on-going since before the 1984/85 famine in Ethiopia became international news. Little is officially known about the character and scale of these operations, however, as a result of their politically sensitive nature. The background, assets and limitations of the operations are examined, with a focus on the period 1985—1988. The report also addresses issues arising from the delivery of assistance in the context of so-called internal wars against the central government.

INTRODUCTION

Increasingly, relief managers are faced with the necessity of implementing emergency operations to address major food shortages in the context of internal wars of resistance against central governments. Whether in response to the disruption of local production brought on by the war itself, or to drought-induced crop and livestock failure in the conflict zones, such operations pose unique problems of both a practical and political nature.

Internal wars tend to divide famine-affected regions into discrete areas of military ‘control’\(^1\) by central government and resistance movement forces. Operational access to the entire population in need may thus require programmes implemented through both official and unofficial channels, particularly when people fear to cross military lines to receive assistance. While the legal orientation of most multilateral institutions remains that of establishing aid relationships with recognized governments, NGOs are increasingly compelled to undertake aid relationships with ‘non-recognized’ movements, in order to fill the gap. This may involve establishing operational bases in adjacent countries, meaning that relief supplies cross international boundaries \textit{en route} to beneficiaries in rebel-held areas.

It has been suggested that the cross-border relief programmes from Sudan to Eritrea and Tigray province, northern Ethiopia, are two of the most effective operations of this type (Cuny, 1989). However, because of political sensitivities \textit{vis à vis} the Ethiopian government, little is known about their exact character outside those agencies directly involved. The degree to which cross-border operations (CBO) remains officially ‘invisible’ today is reflected in a recent statement by David Morton of the World Food Programme, that ‘Tigray is inaccessible’ to relief transports.\(^2\)

The following description of the CBO is therefore an attempt to outline some of the main assets of, and constraints on, these programmes, in the hope that it will prove
useful background for relief managers facing similar situations. Although Eritrea and Tigray are very different settings — economically, politically, and militarily — for the purposes of this paper their similarities in terms of emergency operations will be emphasized.

THE 1984/85 FAMINE

Chronic food shortages as a result of drought, war, and economic under-development have plagued Eritrea, a former Italian colony, and Tigray province, northern Ethiopia, throughout this century. The 1984/85 famine had its origins in severe drought conditions in pockets of those regions from 1980 to 1983, leading to widespread erosion of economic assets available to the peasantry. By the time the annual rains failed again in 1984, massive internal migrations had been building up each year since 1982. In Tigray, up to 400,000 people from the central highlands were moving seasonally to the more fertile western lowlands, and spilling over in smaller numbers into the Sudan. In Eritrea, at least 140,000 people had relocated to ERA displaced peoples’ camps. By early 1985, out of a total estimated population for both regions of 7.5 million, some 3,750,000 were at risk and in need of relief inputs.3

ZONES OF CONTROL

The 1984/85 famine took place in the context of long-running wars between political/military movements in Eritrea and Tigray, and the Ethiopian central government headed by Menghistu Haile Mariam. By 1984, the Eritrean Peoples Liberation Front (EPLF), fighting for independence of the former colony annexed by Ethiopia in 1962, and the Tigray Peoples Liberation Front (TPLF), fighting for self-determination of Tigray province and a change of government in Ethiopia, had established distinct areas of military and administrative control. EPLF and TPLF forces were active in up to 85% of the countryside, while government troops were located in garrisoned towns along the main highway running north-south from Asmara to Addis Ababa. Since 1975, the government has launched an average of one major military offensive per year (Smith, 1987), and carried out aerial bombardments of the rural areas, resulting in large numbers of civilian casualties.4

In 1975 and 1978, two indigenous humanitarian organizations were formed with the aim of providing relief and development assistance to civilians living in EPLF and TPLF-controlled zones, respectively. Operating from a logistics base in eastern Sudan, ERA (Eritrean Relief Association) and REST (Relief Society of Tigray) received a small amount of external relief aid, mainly in the form of sorghum purchased in Sudan and trucked across the border at night. The primary conduit for this assistance was a consortium of European church-based NGOs with headquarters in Khartoum, called the Emergency Relief Desk. The operation was low-profile, to the extent that other agencies in Sudan were largely unaware of its existence.

When television news of the famine in Ethiopia broke in late 1984, massive inputs of assistance were triggered from the international community. The majority of these inputs were provided through ‘official’ channels, either bilaterally to the government’s Relief and Rehabilitation Commission, or through multi-lateral organizations, international NGOs, and church networks based in Addis Ababa. The special UN Office for Emergency Operations in Ethiopia acted as an overall coordinating body for activities of the various UN agencies. The operation utilized a logistical system of truck transport from the ports of Massawa and Assab, along the main highway, to feeding centres established in the government-controlled towns. Access to the countryside, except for a small
perimeter area surrounding the towns, was restricted by the Ethiopian government for security reasons. Instead, dry ration distributions were established on a monthly basis by, among others, the International Committee of The Red Cross (ICRC) and the Ethiopian Catholic Secretariat, with the aim of assisting peasants from villages in contested areas, who would migrate to the towns, receive food and return home again. Thus, although the geographical reach of the operation from the government side was severely limited, it was widely believed that peasants from non-government controlled areas were also being assisted (The New York Times, 1985).

PEASANT CHOICES

In contrast to the situation in 1973/74, Eritrean and Tigrayan peasants faced new limitations on their options in response to the famine of 1984/85. The large commercial estates near the western border with Sudan had been nationalized by the revolutionary government, so that labour opportunities were largely curtailed as a result of employment quotas. More important, entry into the government-controlled towns now involved personal risk as a result of the war. In Eritrea, fear of being identified as a resident of EPLF-controlled areas and thus an EPLF sympathizer, and in Tigray, fear of the resettlement programme initiated by the government in late 1984, led to massive migrations in the opposite direction — to ERA and REST assistance centres, and to refugee camps in eastern Sudan.

In some cases, peasants living only three to four hours’ walk from feeding centres along the Asmara-Addis Ababa highway opted instead for the four to six-week walk to Sudan. Interviews conducted with Tigrayan migrants in early 1985 indicated that reports of harassment and resettlement, originating from peasants who had visited towns such as Makele and Korem, were spreading quickly through the countryside (Hendrie, 1985). These, together with the continued bombardment of rural villages by the Ethiopian airforce during the peak famine months, convinced many people that the government was attempting to draw them into its zones of control for political rather than humanitarian reasons (Clay and Holcomb, 1985).

THE POLITICS OF AID

By early 1985, reports began to emerge that the majority of famine-affected people in the north were not being reached through official aid channels. Despite external pressure, however, the Ethiopian government remained unwilling to accept UN, ICRC, and internationally-sponsored safe passage proposals, whereby relief trucks would be allowed to move out from the towns into the non-government controlled countryside. To the government, such agreements would entail de facto recognition of the war, and of the EPLF and TPLF as organized movements capable of administering large geographical areas. The reluctance of the government to acknowledge these facts officially in turn led major aid institutions, particularly the UN bodies, to treat the war and the related question of access to famine-affected areas with a high degree of discretion. Western governments were similarly cautious in raising concerns that might appear to violate diplomatic protocol in relation to Ethiopian sovereignty. Consequently, the rural-based delivery systems of ERA and REST were never publicly acknowledged as alternative channels of aid that could complement the access of the official operation; many expatriate relief managers operating from the government side were in fact unaware of their existence. As a result, the CBO received inadequate levels of external support in relation to its potential capacity until late 1985.
BACKGROUND TO THE CROSS-BORDER PROGRAMME

The Emergency Relief Desk was formed in 1981, to provide a neutral channel of relief assistance to civilians in the non-government controlled areas. The identity of those NGOs participating in the ERD is kept confidential. It thus acts as a discrete 'buffer' which major donors and international NGOs utilize to support cross-border activities, without endangering programmes already established on the government side. In addition to ERD, two other major NGO consortia were established by 1984 for the same purpose: the Tigray Transport and Agricultural Consortium, and the Eritrea Agricultural Consortium. These organizations, together with individual NGOs, also provide funds for ERA and REST agricultural rehabilitation and development projects.

Previous to the harvest failure in eastern Sudan in 1984, the cross-border operation secured external grain inputs through local purchases of Sudanese sorghum. These had the advantages of being close to the border, competitive in price, and appropriate as a staple food. In addition, small quantities of supplementary food and medicines were imported through Port Sudan, transported to warehouses near the border by rented lorries, and subsequently transferred to ERA and REST trucks for onward transport. The location of the ERD headquarters in Sudan enabled the consortium to carry out a regular, independent monitoring programme of supplies through the ERA and REST pipelines until the final distribution at village level.

In mid-1984, crop failure in Sudan made it impossible to continue local grain purchases. The first major consignment of external food aid channeled through the ERD was received in the form of 5000 MT of wheat from USAID in late 1984. Additional consignments were subsequently received from Canada and Europe. The increase in external commodities necessitated the establishment by ERD of a large warehouse facility in Port Sudan in 1984.

INCREASES IN CROSS-BORDER ASSISTANCE 1985 AND 1988

By late 1984, ERA and REST were making increasingly urgent appeals for support for their relief programmes, with the aim of maintaining famine-affected people inside their respective territories, and reducing internal displacement. Although existing donations of food aid enabled REST and ERA to establish regular distributions, the level of assistance until late 1985 was sufficient to support only 5% (REST, 1985; ERA, 1985) of the affected populations, and insufficient to prevent the exodus of more than 300,000 people to eastern Sudan.

The main obstacle to increasing food distributions via cross-border operations throughout 1985 was trucking capacity. Extremely rugged roads through mountainous terrain, and the need to move relief supplies at night due to threat of air attack, created conditions where an average of 20% of ERA and REST's transport fleets were off-road at any given time. Repeated appeals for assistance in the form of new trucks were highly problematic with major donors, however, because of their perceived potential for use in military operations.

In mid-1985, after seven months of deliberation, USAID and the Office of Foreign Disaster Assistance of the US government approved a grant for the purchase of 150 trucks to be added to the ERA and REST fleets. Although the trucks did not arrive until late 1985, and only after much policy confusion, the grant signalled a willingness by the US Government to support the CBO, which remained, although with periodic back-tracking, until late 1988. It is likely that this decision was heavily influenced by the de-stabilizing effect of the massive refugee influx to Sudan, an important US ally in the region.
The role of the cross-border programme as a refugee prevention mechanism was used frequently in internal State Department discussions as a means to justify the questionable legality of the programme in relation to the Ethiopian government.

When it became apparent that safe passage agreements for the war zones would not materialize, and as migrations to Sudan indicated the limitations of the town-based feeding programmes, other major donors and international NGOs increased food-aid shipments to ERA and REST. These were committed either directly, or in most cases through the medium of ERD and other consortia. By the end of 1985, the cross-border operation had received and transported over 40,700 MT of food assistance (ERD, 1986). Funds for the internal purchase of grain in surplus regions of Tigray allowed for the distribution of an additional 3000 MT of grain and pulses.6

Having proved itself capable of delivering large quantities of food aid, the CBO continued to receive steady support from major donors in Europe and the United States throughout 1986 and 1987. In early 1988, when crop failures again threatened Eritrea and Tigray with famine, a second large jump in the volume of donated commodities, and grants for the purchase of additional trucks, enabled the transport of 150,000 MT of food aid to EPLF and TPLF-controlled areas during the year (ERD, 1988).

In 1987, unlike in 1984, crop failure occurred in the context of a shift in the military situation, where potential areas of access from the government side were greatly reduced. Major donors, having learned from the experiences of the previous famine, were privately relying on the CBO to support two-thirds of the total affected population in the north.7 By assisting the operation early, the refugee influx to Sudan, widely predicted in early 1988, did not materialize, as drought-migrants were instead serviced by distribution points located within one to two days' walk of their home villages, or in displaced peoples camps.

ASSETS IN IMPLEMENTING CROSS-BORDER ASSISTANCE

ERA, REST, and the Civilian Administrations

By far the greatest asset of these operations is their setting in the context of mass-based systems of revolutionary government in Eritrea and Tigray. Under the respective auspices of EPLF and TPLF, village, district, and regional-level civilian councils are elected to coordinate socio-economic activities and implement community-based development projects. The relief operations of ERA and REST, which perform the commodity delivery, internal warehousing, and supply allocation functions, are thus able to relate directly to highly organized administrative structures with roots at village level.

Needs assessments are carried out within individual communities, based on detailed knowledge of family circumstances; final lists of primary and secondary beneficiaries are approved by popular vote at public meetings. The lists are then forwarded through regional councils to ERA and REST headquarters, where allocations of available resources are made on a percentage basis in relation to aggregate numbers of beneficiaries in each administrative zone. Relief distributions are carried out on a rotating basis at district centres by ERA/REST workers, in the mandatory presence of village council members who ensure that targeted families within their respective communities come forward to receive supplies. Village councils then have responsibility for organizing the onward transport of goods by pack animal back to the village. The organization and dedication of ERA and REST staff, and the advantages of indigenous relief management, are clearly apparent in this context; distribu-
tions are efficient and orderly, and display a spirit of cooperation aimed at solving community problems (Hendrie, 1986).

**Operational Flexibility in Response to War**

The existence of the village council system has enabled both ERA and REST to manage the rapid transition from small to large-scale operations in the field without substantial increases in their own staff. Decentralized administration, together with the continual updating of assistance requirements by the civilian councils, also allows for a high degree of operational flexibility in response to changing needs. For example, relief commodities *en route* from Sudan can be quickly re-directed to alternative distribution points in order to accommodate newly displaced groups; a frequent occurrence, mainly as a result of the war.

This flexibility also means that disruption by war is not a major limitation in delivering assistance. Transport and distribution at night minimizes the effect of aerial bombardment on the relief operations, although its damage to the economic base of the peasantry is well-documented (Bondestam *et al.*, 1988). Shifts in zones of military control expand or contract access to distribution points accordingly, although even during times of government expansion into previously rebel-controlled zones, many peasants opt for further migration to those ERA/REST feeding centres that remain operable (Hendrie, 1986).

The fact that the war does not significantly hamper cross-border activities also reflects a characteristic of conflict between a centralized army and popularly-based movements. In 1985, REST’s relief operation was interrupted for a period of up to two months by a large-scale government offensive, which cut the main transport and migration route linking central and western Tigray. By virtue of its mobility as a guerrilla force at that time, however, TPLF was able to open new routes to the south, and draw off government forces with diversionary attacks along the main highway. Similarly, the capture of the Eritrean towns of Barentu and Teseney by the government in the summer of 1986 led ERA simply to shift its access route from Sudan farther south, where it eventually joined the existing EPLF road east to the foot of the central highlands.

**The Internal Purchase Programme**

The capacity of ERA and REST to implement effective programmes in the field led to an increasing level of trust among international NGOs, manifested in a shift away from provision of mainly commodities, in 1985, towards donations of both cash and commodities from 1986 onwards. By the end of 1986, ERD was providing cash reimbursements directly to ERA and REST for internal transport costs (by truck and pack animal), based on a calculated rate per ton, and cash grants for the purchase of rehabilitation inputs such as seed, tools, and oxen. This trust was underlined by the cooperation of ERA and REST in maintaining the confidentiality of donors as requested.

In addition to cross-border transport, an important component of REST’s relief programme in particular has been the internal purchase and re-distribution of grain in the western lowlands of Tigray. This project has a double function. First, it increases the total tonnage available for food distributions, without also increasing the load on cross-border transport capacity. Second, it encourages the re-establishment of a grain market infrastructure. Lack of purchasing power among the peasantry, the absence of adequate transport between deficit and surplus regions, and the disruption of trade between the urban and rural sectors as a result of the war, had largely demolished existing grain markets in Tigray prior to 1985. Since then, inputs of cash to REST for the purchase of (mainly)
sorghum has given farmers incentive to increase production; prices are set at market value and REST prohibits merchants from setting a minimum on the amount of grain purchased from local growers. Similarly, small traders have increased their activity and are expanding purchasing and transport networks into areas previously unserved by an integrated market. A consequence of this developmental function is that prices for internally-purchased grain are high at present, although it is assumed that as a market system is established, they will gradually drop (Bezahih and de Waal, 1988).

CONSTRAINTS

Parallel but Unconnected Operations

The main constraints on the programme are external to the operation on the ground, and reflect the overall political context of aid to the north. Foremost among these is the lack of discrete but formal channels of communication between relief managers involved in cross-border operations, and those implementing similar programmes on the government side.

As a result of diplomatic sensitivity in relation to the government, the UN Emergency Operation in Ethiopia has, since 1985, been reluctant to incorporate detailed information from the EPLF and TPLF-held areas in operational planning. Information forwarded to UN personnel in Europe by cross-border NGOs in 1985 and 1988 met with little response; in some instances, suspicion of a political motivation was expressed, reflecting the tendency to view EPLF and TPLF as 'security problems', rather than legitimate parties to the conflict. At present, the UN operation in Ethiopia continues to conceptualize its work in terms of a single operation, rather than the reality of three operations on the ground; needs and programme assessments are subsequently limited to information that can be obtained from the government side.

The practical consequences of this disjuncture between official and unofficial operations are largely negative. For example, key figures that affect decision-making and allocation of resources, such as numbers of people potentially served by distributions in respective zones of the conflict, are never reconciled in direct discussion between sides, and thus tend to err in favour of the official operation. Information about the conduct of the war is circulated among international organizations on respective sides, but rarely across sides, so that forming a complete picture of its scale and impact on the civilian populations is made difficult. The lack of information-sharing is exacerbated by the fact that few relief officials travel back and forth between Addis Ababa and Khartoum on a regular basis.

The Dilemma of NGOs

International NGOs have, since 1985, acted as the primary conduit for major donor assistance to ERA and REST. Although they are well-suited for the purpose, by virtue of their flexibility and non-governmental character, a number of structural problems arise precisely because NGOs are obliged to fill gaps in the overall relief effort by operating from Sudan.

By definition, NGOs lack the protection of international protocols or the power of UN affiliation to underline the humanitarian legitimacy of their relationships with 'non-recognized' movements. Consequently, they are vulnerable to allegations of partisanship, which directly threaten their capacity to solicit additional funds for cross-border operations from major donors. The core of NGOs comprising the ERD are, to some extent, able to circumvent this problem by virtue of their church identities, but suspicions were aroused when ERD staff in Khartoum began advocating increased assistance in early 1988 within the
larger aid community. Further, a dilemma is created by, on the one hand, the importance of actively disseminating information about the positive activities of ERA and REST in the absence of international awareness of the cross-border programme and, on the other hand, the need to remain formally ‘neutral’ in the eyes of major donors.

More importantly, the failure of the UN to establish discrete channels for negotiation on the conduct of relief operations with all parties to the conflict, including EPLF and TPLF, compels cross-border NGOs to carry out this function informally, by representing the aid policies of EPLF and TPLF to major donors. The inadequacy of this system as a substitute for direct communication was underlined in October 1987, when an attack on a World Food Programme-sponsored convoy prompted much public speculation by the UN about the intentions of EPLF regarding food-aid transports in Eritrea, while at the same time a detailed proposal from EPLF regarding safe passage of these transports, conveyed through Khartoum-based NGOs to the UN representative in Addis Ababa, was largely ignored.

The ICRC, by virtue of its identity as a neutral entity for the provision of assistance to civilians in war zones, is well-suited to act as a channel for communication with EPLF and TPLF. However, by mandate it must first obtain formal agreement from all parties to the conflict that such contacts will be established. As long as the Ethiopian government fails to agree, ICRC is legally prevented from institutionalizing this role. Further, ICRC will only establish relationships with non-recognized movements to negotiate the conduct of its own relief operations, and cannot, by definition, act in the capacity of an overall coordinating body, as does the UN.

In such circumstances, international NGOs are obliged by default to undertake a political responsibility, and perform a diplomatic function for which they are ill-suited and which they are essentially powerless to implement. The intention of cross-border NGOs to confine themselves strictly to humanitarian activities is thus compromised by the failure of the multilateral institutions to address the political issues themselves.

Perceptions of War

A chronic problem in assisting the recovery of peasants in Eritrea and Tigray is the reluctance of major donors to provide adequate inputs for ERA and REST rehabilitation and development projects. Two reasons are given: first, that it is impossible to implement development projects in a war zone, and second, that infrastructural assistance implies political support for the EPLF and TPLF. Consequently, the majority of inputs for these projects are provided from private funds of international NGOs, which are inadequate to cover the substantial requirements of what are essentially two national recovery programmes.

Western perceptions of war, fuelled by dramatic television imagery, tend to underestimate the capacity of civilians to cope with conflict over long periods of time, and adapt in order to continue socio-economic activities. In Eritrea and Tigray, social cohesion, as a result of common aims in a revolutionary context, enables peasants to absorb chronic disruptions in economic activity as a result of war, without losing their enthusiasm for participation in development projects that improve agricultural knowledge and skills. The capacity of the CBO to demonstrate the success of development projects in the war zones is limited, however, by the fact that most Western government and multi-lateral organizations prohibit their own personnel from travel to EPLF and TPLF-controlled areas. NGO reports alone are often insufficient to alter existing attitudes among major donors.
The assumption that food-aid is a non-political input in conflict situations is widespread in aid circles; however, it does not necessarily bear scrutiny in practice. Food-aid can be easily monetized or applied to non-humanitarian purposes, while, conversely, agricultural rehabilitation inputs have little military application. Thus, the distinction between what constitutes political and non-political aid in the context of war is largely an externally manufactured one. The reluctance of major donors to provide cash grants, via NGO channels, to ERA and REST for the internal purchase of agricultural inputs has been more difficult to counter, since it relates to the general preference for donation of commodities as opposed to cash evident in many international relief operations. Underlining this reluctance are also in-built prejudices about the administrative integrity of African aid organizations, particularly when they are associated with non-recognized political movements.

POSTCRIPT

New reports of crop failures in Eritrea and Tigray have recently been disseminated by World Food Programme, ERA and REST. The current military situation, especially in Tigray, has changed considerably from that described in this report. At present, TPLF is in full control of the province, including the towns, and has extended military operations south into Wollo province, along the main highway, up to the provincial capital of Desse. In Eritrea, EPLF has extended the front-line of combat south from Nacfa to a perimeter running just north of the town of Keren, and east into the central highland plateau from Barka. These changes will have considerable impact on the conduct of relief programmes, especially with regard to the question of access to worst-affected rural areas, and should realistically be incorporated into operational planning.

NOTES

1. For the purpose of cross-border operations, the term 'control' is broken down into three: areas under the permanent control of EPLF or TPLF, meaning Ethiopian government troops cannot penetrate their lines at any time; areas under the administrative control of EPLF and TPLF, where government troops may penetrate during major offensives; and areas where military and administrative control is contested.
2. The Guardian, 5 October 1989, report by Peter Biles, referring to current TPLF control of the entire province.
3. The figure assumes the lowest of the range 3 to 3.5 million for Eritrea, and 4.5 and 5 million for Tigray. ‘Tigray’ here includes areas under TPLF control that are officially designated as parts of Gondar and Wollo provinces by the government.
4. Independent reports of civilian casualties by bombing include: 2 October 1984, Molki village, Seraye province Eritrea — 42 killed, 92 wounded; 17 and 18 February, Abi Adi town, central Tigray — 20 killed, 150 wounded; late March 1985, ZelaZelay migrant transit centre, western Tigray — 4 wounded, pharmacy and clinic destroyed; 22 March 1985, Abi Adi — 20 killed, 8 wounded.
5. The Times, 25 February 1985, article by Paul Vallely, citing a confidential Ethiopian government report confirming that more than three-quarters of the people in the famine-stricken province of Tigray were failing to receive food aid; also The New York Times, 15 June, citing a statement by an ICRC Ethiopia delegate, Leon de Reidmattan, that famine had grown much worse because of the inability of relief workers to reach famine victims in gray areas.
6. Estimate by the author.

References


### Barbara Hendrie
25 Fitzjames Avenue
London W14
Essential Drugs: A Cornerstone to Refugee Health Care

RUDI CONINX

HISTORY
In his report to the twenty-eighth World Health Assembly in 1975, the Director-General of the organization, Dr Hafdan Mahler, reviewed the main drug problems facing the developing countries and outlined possible new drug policies. Following his statement, the Health Assembly requested him, through resolution WHA 28.66, to implement the proposals contained in his report and, in particular, to advise member states on the selection and procurement, at reasonable cost, of essential drugs of established quality corresponding to their national health needs.

Following wide consultation, an initial list of essential drugs was included in the first report of the Expert Committee on the Selection of Essential Drugs in 1977. This was subsequently revised and updated in four further reports (in 1979, 1983, 1985 and 1988 respectively).

Loyal to its commitment to the Essential Drug Programme, WHO created the 'Action Programme on Essential Drugs and Vaccines' in 1977. This programme focuses, amongst other things, on essential drug availability in primary health care and has become the engine of a world-wide effort to enhance the idea of essential drugs and to make them easily available (Lauridsen, 1984).

At the international conference on Primary Health Care in Alma Ata in 1978, the Essential Drug Programme was recognized as an essential part of primary health care and was included in the ‘Declaration of Alma Ata’, the principles of which are seen as essential to achieving the goal of ‘Health for All in the Year 2000’.

Since then, many countries have chosen to use an essential drug list in their national health programme, for example, Ghana (Hogerzeil, 1986), Bangladesh (Ghulam Mostafa, 1984), Tanzania (Yudkin, 1980), and others.

RATIONALE FOR AN ESSENTIAL DRUG LIST
To a lay person, the bare concept of an essential drug list may seem very strange and potentially doing injustice to a patient. Aren’t all drugs essential? Why would a physician prescribe a drug that is not essential? People familiar with prescribing behaviour in third world countries — and not only there — know that the truth is very different (Greenhalgh, 1987; Harndon and Van de Geest, 1987). Many drugs prescribed are only marginally useful to the patient and often to the patients’ detriment. Many drugs on the market are useless, of unproven value, in illogic combinations or even downright harmful or dangerous. There is considerable pressure from pharmaceutical companies to keep things as they
are, often in the name of freedom of choice for the physician and the patient. Developing countries spend a considerable amount of their hard-earned foreign currency importing these drugs (Wang’ombe and Mwabu, 1987).

A closer look at the need for different drugs reveals that many drugs are not necessary, and that their absence will not result in any change in health status. Although it is debatable exactly how many drugs are necessary (Bakke, 1987), there is agreement now that good health care can be ensured with a reduced number of drugs. These are called ‘Essential Drugs’ and are limited to drugs of proven efficacy and safety, well known therapeutic properties and which are available at low price.

WHO has come up with a list, limited to about 200 different drugs and vaccines, which will permit any health service to provide basic but good health care.

ESSENTIAL DRUGS AND REFUGEE HEALTH CARE

Although the general principles of the essential drug programme apply, characteristics of refugee situations are such that an essential drug programme becomes all the more important. We shall look into the reasons why an essential drug list is not only feasible in refugee situations but essential for a comprehensive health programme.

Refugee health programmes differ from national health programmes in the sense that they are usually geographically limited and involve a limited number of people. Speed is often required and health services have to be set up without existing infrastructure. Efficiency in procurement and logistics of drugs becomes all the more important. Many refugee situations attract a vast spread of different aid agencies from all over the world, usually under the coordination of a United Nations agency or the host government. Without active coordination, the end result is likely to be chaos resulting in inefficient use of resources, the drugs in particular. The WHO Essential Drug List provides health planners a useful guideline to decide which drugs to concentrate on.

ARGUMENTS PRO AND CONTRA AN ESSENTIAL DRUG LIST IN A REFUGEE CAMP

Arguments Contra

First, it limits the choice of the prescribing physician.

As it is now well established that good health care can be provided with the drugs on the Essential Drug List, it is clear that an individual’s preferences will not add anything to the patients’ wellbeing. Bearing in mind the fact that many physicians from different countries — all with different prescribing behaviour — will have to work together, it is only logical that a consensus be reached on which drugs to use. As many physicians tend to stay for relatively short periods of time, to give in to an individual’s preferences is likely to result in a kaleidoscope of drugs representing different prescribing practices in the world. Large stocks of drugs may remain unused once the physician has left the scene and new stocks will have to be procured for his or her successor. In view of the role a physician needs to play in training local health personnel, it is also obvious that there cannot be a consistent training programme on such a basis and there will be a lot of confusion for the local health worker, who will be left trying to figure out the rationale behind all these different prescribing practices.

Second, patients may need drugs not on the Essential Drug List.

By definition, it is very unlikely that the drug that is needed will be essential. It is, however, conceivable that a patient may need a drug for a rare condition or for
another specific reason. Although this is likely to go beyond the level of care that is available in a refugee situation, a health provider may decide to make an exception on a case by case basis if the drug is thought to be life-saving, if affordable, and will not lead to chronic care dependent on this drug.

Third, patients may have a perceived need for a drug not on the Essential Drug List.

Proper health education should be part of primary health care. This includes information about the use and misuse of drugs and should be guided by health professionals. Too many drugs are attributed qualities they do not have and people are willing to pay an exorbitant amount of money for them. It is the role of the health worker to ensure that people receive drugs they need at a low price. The Essential Drug List is the tool to do this.

Fourth, the existence of a competing ‘free market’. In many refugee operations, people are able to procure for themselves, at great expense, drugs available on the free market in order to meet a perceived need. These drugs are likely to be of doubtful therapeutic value, often harmful, often expired or not stored in good condition and likely to consume a large part of the refugee’s already meagre budget. In most situations, it will not be possible to outlaw this free drug market. The refugee health worker will have to rely on the principles of primary health care and health education to achieve the goal of health for all. Dealing with the free market may be one of the most frustrating issues to face. As the often almost mythical value of certain free market drugs has no reasonable basis, it is difficult to undo this by health education, which is exactly based on logic and reason.

Arguments pro

First, a limited list of essential drugs does meet the need.

In fact, a much more reduced list would be sufficient to deal with the problems faced at a primary health care centre. It is therefore undefendable to spend resources over and above this.

Second, easier logistics.

For the agency in charge of drug procurement, there is a strong advantage in dealing with a restricted list of drugs.

Third, it is cheaper.

Treatments for similar diseases will be dealt with in the same way. Drug orders for single items will be bigger, which may result in price reductions. Less shelfspace will be necessary as many items can be stored together in bulk. As only drugs from the Essential Drug List will be used, the procurement agency will be assured that the use will be regular, resulting in a high turnover and reducing the likelihood of drugs expiring on the shelves. In many countries with a reliable domestic supply of pharmaceuticals (Thailand, Pakistan, etc.), there is no need to keep very large stocks, which tie up large amounts of money. Smaller stocks also reduce the likelihood of drugs expiring on the shelves.

Fourth, the Essential Drug List can be used in conjunction with a Standard Treatment Protocol.

A Standard Treatment Protocol, outlining in an unequivocal manner the agreed-upon treatments for the most common conditions the expatriate as well as the local health worker might encounter, should be instated in a very early phase of the operation. This will avoid therapeutic confusion and even conflicts between physicians with different backgrounds and prescribing behaviour. If the epidemiology is known, the combination of a Standard Treatment Protocol and an Essential Drug List can be used for planning purposes, as it can be estimated which drugs are likely to be consumed in large quantities.

Five, its usefulness in the training of local health care workers.

It will be easier to train health care
workers in the safe use of a limited number of drugs, which they will learn to know very well. Supervision of health care workers will become much easier as the choices are now limited by both the Standard Treatment Protocol and the Essential Drug List. Once the diagnosis is made — which eventually can be done through the use of simplified flow charts — all the rest follows logically from it.

Six, linkage with the WHO/UNHCR/UNICEF Emergency Drug Kit.

The Emergency Drug Kit was originally developed by the WHO Emergency Relief Operation in conjunction with the Office of the United Nations High Commissioner for Refugees (UNHCR) and the London School of Hygiene and Tropical Medicine. The Kit contains reliable, standardized, inexpensive and appropriate drugs and health equipment, urgently needed in a disaster situation. The contents are calculated for the needs of 10,000 persons over three months. The Kit is readily available from UNIPAC in Copenhagen. In some refugee situations, especially in the initial stages, one may call on these resources. As the Kit contains only drugs from the Essential Drug List, it fits in well with the pharmacy supply system that will be set up later.

Seven, the Essential Drug List is a useful and powerful tool in banning harmful drugs.

This can only be in the interest of the patient.

CONCLUSION

An Essential Drug List is not only useful but essential to a comprehensive health care programme in a refugee setting. It should be part of an integrated primary health care programme and part of the health care workers' training programme. It facilitates supervision of health care workers and it reduces cost while guaranteeing a basic level of health. Anybody involved in refugee health care should therefore make sure an Essential Drug List is introduced right from the beginning of the operation.

References


Rudi Coninx
WHO Co-ordinater
GPO Box 776
Peshawar
Pakistan
Analysis of Medical Needs in Disasters Caused by Earthquake: The Need for a Uniform Injury Reporting Scheme

GREGG S. POLLANDER and DOUGLAS A. RUND

Despite the need for timely and appropriate international assistance to stricken areas, events as recent as the earthquake in Soviet Armenia demonstrate the need for major improvement in disaster relief efforts (Noji et al., 1989). In our view, one ingredient in effective disaster relief planning results from the availability of accurate data regarding injuries sustained during and after the disaster event. We are convinced that accurate data would allow us to tailor effective medical relief packages appropriate to the circumstances.

Despite the great efforts made in responding to earthquake disasters in recent decades, we suggest that nearly all disaster aid programmes can still be criticized for two major reasons: the assistance arrives too late to achieve maximum survivor salvage, and the assistance received is not tailored to meet the needs created by the specific disaster.

Assistance must arrive promptly to ensure greatest possible victim salvage. Particularly important in this regard is search and rescue assistance. Reports from Soviet Armenia and Tangshan stress the dramatic decrease in survival for victims entrapped more than 24 hours. Sheng (1987), and others, illustrate the nearly total survival of those rescued within one-half hour, as against one-third survival among those rescued on the second day following the earthquake. Although highly publicized survivals are reported following prolonged entrapment, less than 10% survival was demonstrated for those rescued on the fifth day following the Tangshan earthquake (Table 1).

One reason for the failure in international assistance concerns the kind of epidemiologic data on which we base our assistance efforts. Others have noted the lack of available data concerning the distribution of injuries in the population by number and type, relationship of types of injury to type of housing or office construction, variation of impact by time of day, and variation of impact by population factors (density, distribution, sex, vulnerability, age, education, etc.) (De Ville de Goyet, 1986). To these items we add the need for information regarding specific descriptions of injuries, an estimation of the speciality care and equipment their management requires, and data regarding the duration required of hospital care. In an attempt to summarize the available data we have reviewed published accounts of earthquake morbidity occurring in the past 30 years for descriptions of injury distribution.

In 1963, Saidi attempted to classify and quantify injuries resulting from the 1962 earthquake in Iran (Saidi, 1963). The earth-
TABLE 1
Survival Time vs. Rescue Time

<table>
<thead>
<tr>
<th>Time of Extrication</th>
<th>No. of persons</th>
<th>% living</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-half hour</td>
<td>2277</td>
<td>99.3</td>
</tr>
<tr>
<td>1 day</td>
<td>5572</td>
<td>81.0</td>
</tr>
<tr>
<td>2 days</td>
<td>1638</td>
<td>33.7</td>
</tr>
<tr>
<td>3 days</td>
<td>348</td>
<td>36.7</td>
</tr>
<tr>
<td>4 days</td>
<td>395</td>
<td>19.0</td>
</tr>
<tr>
<td>5 days</td>
<td>459</td>
<td>7.4</td>
</tr>
</tbody>
</table>


quake occurred at 7:21 p.m. and had a magnitude 7.2 on the Richter scale. Saidi found himself unable to report all injuries because of the lack of a reporting system and thus, as an illustration, reported data from a 1960 Iranian earthquake (Table 2). Even in this early, rather unsophisticated report, one is impressed by the large percentage of bone fractures, suggesting the need for orthopedic supplies, fixation devices, personnel, and overall surgical capability.

De Ville de Goyet et al. (1976) reported injuries from an earthquake in Guatemala, which occurred at 3:02 a.m. on 4 February 1976, with a magnitude of 7.5 on the Richter scale. Destruction spread over a vast region, including hilly terrain containing isolated villages and small cities. In some areas where adobe construction predominated, 90% of homes were totally destroyed. Eighteen days after the impact the death toll measured 22,778 and the number of injuries was estimated at 76,504. Only one hospital’s experience, representing 157 injuries, was reported. The number is not only small but is also not necessarily a representative sample of the entire injured population. The authors noted that ‘the reliability of the reporting system under emergency conditions was very low’. In some areas of the country, it was only possible to make a ‘rough guess’ as to the total number of injured requiring care. Citing only three studies in the literature up until that time, the authors commented that ‘scientific literature on various earthquake related lesions is scanty’.

De Bruycker et al. (1985) surveyed households in selected Italian villages after the 1980 earthquake. The authors listed the major injuries in patients with multiple injuries. As in the Gueri study (see below), the population-based sampling technique improved the accuracy of data collected. With regard to type of injury, the authors reported the following percentages: lacerations 42, contusions 26, fractures 18.9, and ‘cuts’ (lacerations) in 9.7. Anatomic sites of injury were the following: legs 39%, head 23.2%, chest 18.9%, arm 16.4%, and pelvis 2.5%. The ability to walk immediately after the incident was measured as a rough index of injury severity: 44.5% could walk without assistance, 22.8% required assistance, and 32.7% could not walk. Thirty-two percent of the injured patients were transported directly to a medical facility.

In 1983, Gueri et al., published data about injuries sustained in the 1979 earthquake in Tumaco, Colombia, which had a magnitude of 7.9 on the Richter scale. In addition to hospital data, the authors drew upon a sample of 560 households from a population of 200,000 persons. An interview of a responsible member of the household was conducted by a member of the health service interview team. The subject of the interview concerned injuries and death associated with the earthquake. In this somewhat less chaotic situation, it was hoped that a more complete picture of injury type, magnitude and extent could be determined. The injuries reported by distribution to body part are shown in Table 2. This study also went on to report distribution of cause of death, death by age group, and location of person at time of injury.

Ortiz et al. published more comprehensive injury data in 1986. The authors studied
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</thead>
<tbody>
<tr>
<td>Fracture, clavicle</td>
<td>18 (11.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fracture (skull, face)</td>
<td></td>
<td>16 (1.0)</td>
<td>130 (2.7)</td>
<td></td>
<td></td>
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<tr>
<td>Fracture</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(cervical &amp; dorsal vertebrae)</td>
<td>10 (9.0)</td>
<td>37 (2.3)</td>
<td>388 (8.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fracture (upper extremity)</td>
<td>49 (44.1)</td>
<td>5 (3.2)</td>
<td>80 (4.9)</td>
<td>265 (5.5)</td>
<td></td>
</tr>
<tr>
<td>Fracture (lower extremity)</td>
<td>10 (6.4)</td>
<td></td>
<td>189 (11.7)</td>
<td>584 (12.1)</td>
<td></td>
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<tr>
<td>Fracture (pelvis)</td>
<td>7 (6.3)</td>
<td>4 (2.6)</td>
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<td></td>
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<tr>
<td>Brain concussion</td>
<td></td>
<td>417 (8.6)</td>
<td></td>
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<tr>
<td>Other internal head trauma</td>
<td></td>
<td>173 (3.6)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Open head, facial wounds</td>
<td></td>
<td>320 (6.6)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Traumatic amputation, arms</td>
<td></td>
<td>197 (4.1)</td>
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<tr>
<td>Open wounds, legs</td>
<td></td>
<td>102 (2.1)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Traumatic amputation, legs</td>
<td></td>
<td>170 (3.5)</td>
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<tr>
<td>Vascular injuries</td>
<td></td>
<td>5 (0.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective amputation, arms</td>
<td></td>
<td>13 (0.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective amputation, legs</td>
<td></td>
<td>59 (1.2)</td>
<td></td>
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<tr>
<td>Dislocations</td>
<td></td>
<td>12 (0.7)</td>
<td>61 (1.3)</td>
<td></td>
<td></td>
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<tr>
<td>Sprains and tears</td>
<td></td>
<td>139 (8.6)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Intracranial injury without fracture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Internal injury to chest, abdomen or pelvis</td>
<td>95 (5.9)</td>
<td></td>
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<tr>
<td>Wound of the head, neck and trunk</td>
<td>19 (17.1)</td>
<td>80 (35.8)</td>
<td>219 (13.5)</td>
<td></td>
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<tr>
<td>Wound, upper extremity</td>
<td>11 (4.9)</td>
<td>122 (7.5)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Wound, lower extremity</td>
<td>87 (39.0)</td>
<td>217 (13.4)</td>
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<tr>
<td>Superficial injury or minor contusion</td>
<td>26 (23.4)</td>
<td></td>
<td>415 (25.6)</td>
<td>1203 (24.9)</td>
<td></td>
</tr>
<tr>
<td>Bruises</td>
<td>7 (0.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Injury to nerves and spinal column</td>
<td>10 (4.5)</td>
<td>7 (0.4)</td>
<td>30 (0.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complications of unspecified injury</td>
<td></td>
<td>16 (1.0)</td>
<td></td>
<td></td>
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<tr>
<td>Crush syndrome</td>
<td></td>
<td></td>
<td></td>
<td>533 (11.0)</td>
<td></td>
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<tr>
<td>Burns</td>
<td></td>
<td>56 (1.2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frostbite</td>
<td></td>
<td>4 (0.08)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-earthquake related injuries</td>
<td></td>
<td></td>
<td></td>
<td>52 (1.1)</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>120 (76.4)</td>
<td>35 (15.7)</td>
<td>48 (3.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Injuries</td>
<td>111 (100)</td>
<td>157 (100)</td>
<td>223 (100)</td>
<td>1623 (100)</td>
<td>4832 (100)</td>
</tr>
</tbody>
</table>
injury types and distribution of injury following the 3 March 1985 earthquake in Chile, which had a magnitude of 7.8 on the Richter scale. A total of 1,623 injuries were reported and distributed among men and women as shown in Table 2. Though the authors admit that 'the information contained in this work constitutes neither a universal nor a representative sample of the injured', it represents a more sophisticated attempt to report morbidity and mortality following earthquakes.

The earthquake in Armenia occurred at 11:41 a.m. on 7 December 1988 with a magnitude 6.9 on the Richter scale. Noji obtained data on-site immediately following the earthquake from field surveys of the devastated towns, direct interviews with survivors and officials of the Armenian Ministry of Health, and from data collected by the Division of Information Systems, Armenian Ministry of Health. He reported an overall casualty rate (dead and injured) of 61.8%. Eighty-nine percent of trapped victims were rescued within the first 24 hours by unprepared local residents. Survival rates diminished markedly as rescue time exceeded 24 hours. Emergency care was most needed in the first 3–4 days, just as most of the international assistance teams were beginning to arrive. Among his other observations, Noji points out that the 'poverty of systematic data collection from past earthquakes and relief action remains ... relatively ad hoc and inappropriate ... The development of methods to systematically assess the effects of earthquake will be of great value ...' (Noji et al., 1989).

The most striking feature of the data found in the literature, including the Soviet Armenian data, is its non-uniformity. This is obvious when one notes the lack of consistency in Table 2. While there may be local factors such as population density and quality of housing construction that affect earthquake morbidity from incident to incident, the classification schemes themselves vary from author to author. The absence of an international classification and coding scheme for injuries sustained in earthquakes makes it difficult to plan medical assistance packages, especially when medical needs are greatest in the first 24 hours following the impact. We propose that injury classification data should ideally include the following information: all sites of major injury in an individual (not just the primary injury), whether or not the patient needs a specialized care facility (e.g., hospital, operating room, burn unit, etc.), and what types of medical personnel are most likely to be helpful (e.g., emergency physicians, general surgeons, orthopedic surgeons, neurosurgeons, etc.). From the proper kinds of injury data, one should be able to determine the types of supplies and equipment needed to care for the various casualties. As an example, hemodialysis units needed to maintain artificial renal function following crush injury, were unavailable in adequate numbers following the earthquake in Soviet Armenia. With the limited amount of precise information resulting from non-uniform reporting schemes found in the literature, however, it is impossible to prepare and respond adequately. One of the first steps in the development of proper medical preparation and response to earthquake disaster is the development of a uniform data collecting and reporting system. Major international effort must be put into the creation of such a system.

One appropriate early step would be the development of a study group or task force representing major organizations involved in providing disaster relief. Such organizations include the World Health Organization, the League of Red Cross Societies, Pan American Health Organization, United Nations Disaster Relief Coordinator, International Hospital Federation, the World Association for Disaster and Emergency Medicine (WADEM), and others with special interest, such as the pilot study group examining health and medical
aspects of disaster preparedness, the Committee on the Challenges of Modern Society (NATO). Initial efforts of such a group would be to make available any unpublished earthquake morbidity data. A second step would involve the critical evaluation of existing injury/illness reporting systems, such as the International Classification of Disease System, for useful morbidity categories and overall organization. In our view, the creation of an injury/illness classification scheme would allow development of a plan to begin data collection. One such plan, for instance, would require the formation of national teams of experts trained to analyze disaster morbidity on-site. In the event of a disaster, a team already developed by the affected country would be joined by a corresponding team from one or several countries providing aid. The host team could act as cultural and linguistic guides, as well as providing their own expertise in data collection and morbidity analysis. The participation of the international community in a joint assessment of disaster situations, under the authority of the affected country, would contribute greatly to a better and more efficient response to the challenge of natural disaster. One of our goals should be the building of international expertise in earthquake analysis that will ultimately lead to the creation of systems that can provide timely, appropriate aid to communities affected by disaster.

The aim of collecting data on-site, according to a uniform reporting scheme, lies in its predictive value for the profile of future needs.

References

**Gregg S. Pollander**  
College of Medicine  
The Ohio State University  
Columbus, Ohio  
**Douglas A. Rund, M.D.**  
Associate Professor and Acting Chairperson  
Department of Preventive Medicine  
The Ohio State University  
Columbus, Ohio  
and  
Senior Research Fellow  
NATO Pilot Study: ‘Health and Medical Aspects of Disaster Preparedness’
PROPOSED INTERNATIONAL WORKSHOP: DISASTERS AND THE SMALL DWELLING — DEFINING THE AGENDA FOR THE IDNDR

Workshop Thursday 6 September—Saturday 8 September 1990

In 1978 a conference took place in Oxford Polytechnic on DISASTERS AND THE SMALL DWELLING. It attracted 160 delegates from 25 countries and had a significant impact during the 1980s on the development of more effective post-disaster shelter and housing programmes.

Now, twelve years later at the outset of the International Decade for Natural Disaster Reduction (IDNDR), it has been decided to return to Oxford, in many instances with the same speakers, and with the same keynote speaker, Fred Cuny of INTERTECT. But the major return is to the same subject, asking what has happened in the past twelve years, and where next for the forthcoming International Decade?

The workshop hopes to provide a major review of the subject and to establish an Agenda to IDNDR for the Small Dwelling and Small Builders, relative to hazard reduction measures; it also aims to establish a system to monitor progress in the development of the subject at regular intervals during the 1990—2000 Decade.

To do this the workshop needs the active presence of interested persons from various countries, diverse disciplines, from the UN, governments, NGOs, academic bodies, research institutes, funding bodies and the media. In due course, a call for papers will be issued with further details of the workshop. If you are interested in joining our mailing list please send us your address. For further information, write to Yasemin Aysan, Director, Disaster Management Centre, Oxford Polytechnic, Gypsy Lane, Headington, Oxford OX3 0BP.

With the rising cost to insurance companies of destructive earthquakes, as a proportion of the escalating material toll of these events in both the developed and the developing world, it makes good sense for insurers to attempt a more detailed and accurate identification of earthquake hazards and risks. The volume under review is part of a continuing reassessment being undertaken for the Reinsurance Offices Association, in conjunction with the Department of Geography at Nottingham University, and latterly also at Chester College. The Atlas of Israel is the first in a series of atlases covering individual countries, which it is hoped to produce at the rate of two per year; it comes either as a paperback, or in a ring binder, to which later installments can be added. A fold-out colour map of Israel is included, with seismic hazard zonation shown on the basis of maximum intensity values anticipated in the next 50 years, with an exceedence probability of 20%. The map has been built up from a grid of 5 km squares.

There are many strong points in the method and presentation of this earthquake hazard atlas. The importance of geological structure is recognised, and incorporated into the evaluation of hazard, as is the effect that local soil conditions can have on the intensity of shaking experienced, the extreme distinction being between rock outcrops on one hand and reclaimed land in areas of high water table on the other. It is not made entirely clear how intensity data were incorporated into the hazard analysis, for the seismological input into the zonation scheme (as depicted in Fig. A.2) appears to be in terms of epicentral location and event magnitude (with recurrence frequency indicated when possible). The information presented in the Earthquake Catalogue (see below) contains only epicentral or maximum intensity data, and is not sufficiently detailed to allow isoseismal maps of individual events to be superimposed to produce intensity zoning.

The strongest parts of the Atlas are the discussions of the regional seismicity of the Middle East, which puts Israel in context, and of the situation of Israel as revealed by the hazard zonation map. These sections (B and C) underline the importance of balancing and comparing short-term, modern instrumental data with long-term, historical evidence, and draw attention to the effects of population distribution on the apparent distribution of earthquake activity (e.g. in the Nile Valley). While this cultural or humanistic bias may be misleading in delineating earthquake hazard, it is of course highly relevant to establishing correctly the nature of earthquake risks. The juxtaposition of the hazard zoning of Israel and of the population geography of the
country (Figs. Cl.1.1 and Cl.1.2) illustrates the distribution of earthquake risk, which is highest along the heavily populated coastal strip. This region is hazardous by virtue of its proximity to an active tectonic zone offshore, and because of the unstable foundations provided by the unconsolidated deposits of the coastal plain. The city of Haifa is taken as an example of how the principles of hazard zonation can be applied to a microzonation of a major urban environment.

On the seismicity of the Border Zone (B1.8), it is now possible to refer to Ambraseys (1989); a similar phase of relative quiescence during the present century appears in the Syrian Zone, as noted by the authors (B1.9), in contrast with the impression gained from historical data.

The virtues of these parts of the Atlas make it all the more regrettable that much of the earthquake data on which hazard analysis has, presumably, been based is unreliable. The final section (D — Historical Earthquake Catalogue) suffers from the same defects as a myriad of previous catalogues of the region, and this is essentially because, like them, it relies purely on earlier catalogues. These stretch back to Alexis Perrey and beyond, in a hideous pedigree of error and misunderstanding, each new link in the genealogy through Lyons, Willis, Sieberg and Kallner-Amiran adding new elements of inaccuracy, which culminate, to a large degree, in the catalogue of Alsinawi and Ghalib, published in 1975, and Ben-Menahem’s catalogue of 1979.

The authors suggest (D.1) that they are aware of the defects of these earlier works, and claim that they have been able to eliminate ‘many of the errors of previous catalogues’, which may be true. But the fact remains that, however intelligently one analyses and rationalises the conflicting data found in a variety of catalogues, the problem of what to reject and what to keep remains intractable unless reference is made to the original sources of information. Anything else is merely a new permutation of an already existing body of fatally defective data.

Historical research of this nature is very time-consuming. It may be the case that the constraints on this project, which strictly speaking is a commercial rather than an academic enterprise, made such an approach impossible, although it would be most unfortunate if that were true, given the importance of the subject. Even so, in such circumstances, the most fruitful way forward would be first to evaluate the different available catalogues, and then to use only the most reliable. One test of reliability is to see whether they refer to primary source material, rather than simply to a previous catalogue (or, as in some cases, cite no authorities at all). One of the most useful recent works is by Poirier and Taher (1980), which is among the sources used in the Historical Catalogue; and as a rule of thumb, it might be considered that many of the earthquakes appearing in previous lists, but not in Poirier and Taher, were left out not through the negligence of these authors, but because they found no documentary evidence in the Arabic sources to support their inclusion. Among other useful catalogues that present and discuss the documentary evidence, one may cite Russell (1985), who covers the period before A.D. 800, and demonstrates the falsity of many early events in previous lists.

A very cursory examination of the Historical Catalogue suggests the following corrections, which are offered in a constructive spirit, rather than as an act of demolition — although it is my view that the ‘catalogue genealogy’ needs exactly that, a decisive act of demolition that will consign its several generations to a shelf of antiquarian curiosity, once and for all.

The Damascus earthquake of A.D. 130 occurred in 130 of the Muslim Calendar (hijri), or A.D. 747; a similar error (the legacy of Willis, cf. Ambraseys, 1962)
concerning the events of 233 (= A.D. 847) and 565 (= the major disaster of A.D. 1170). The events of A.D. 447 and 498 did not affect Palestine; nor did the earthquakes of 856, 894, 958 and 1119. The major earthquake of 18 March 1068 is duplicated under the dates 20 April 1067 and 25 February 1070, i.e. three earthquakes for the price of one; similarly, the 1201 June–August earthquake is a duplication of the major event of 20 May 1202 (see Ambraseys and Melville, 1988). The 1115 December 25 earthquake occurred on 20 November 1114. The 1402 north Syria event occurred in 1403; the effects of the 1457 Erzincan earthquake (which did not affect the study region) have been confused with those of the 1458 November 16 event. There is also some confusion between reports of the earthquake of 1481, which occurred on 18 March. Various earthquakes in Damascus in the 14th century are omitted, also an earthquake in December 1705, which affected Damascus, Tripoli and Jerusalem.

These corrections are certainly not exhaustive, but they raise certain issues, among them, of course, the question of to what extent they modify the earthquake hazard zonation presented in the Atlas and reproduced as Fig. Cl.1.1. The answer is, probably, in global terms, very little. To this extent, the defectiveness of the historical catalogue does not invalidate the general delineation of the hazard zones. Nevertheless, the magnitude-frequency relationships of the larger events could be seriously undermined by the inflated number of large events due to duplication of entries in the list; this turn might have implications for the accuracy of the probabilistic analysis for the 50-year return period. At least, however, from the reinsurers’ point of view, the result is likely to be conservative with respect to risk!

With an eye to the future and forthcoming issues in the series, which are doubtless already in production, some additional points might be made. These mainly concern the format of the catalogue and the headings under which data are listed (see D.1–D.3). First, it is reasonable to have doubts over the identification and historicity of some of the very events in the ‘Biblical’ and Classical period, and while there is no harm in including them, for completeness, in an earthquake catalogue, one might ask whether they should be accorded the same weight in hazard analysis as more recent, and better documented events. Second, partly arising from this, it is evident that the location (or epicentre) of an earthquake is a crucial parameter in any hazard zonation which is intimately tied to local geological and geomorphological conditions. One way of retaining earthquakes that are not well-known, but of giving them less weight in hazard analysis, is to put a quality grade on the epicentres selected. Third, it might be rather ambitious to suggest that the causative fault can be identified; rather, one could indicate the fault zone with which an historical earthquake can be associated. Fourth, while it is true that identifying the countries affected by an earthquake can give a good idea of the size of a shock, from the point of view of hazard based on intensity effects, it would be more useful to list some specific places mentioned, with an estimate of the intensity experienced there; in general, intensity data are conspicuously lacking from the catalogue, considering that the Atlas is presented in terms of intensity zonation. Finally, the question of the completeness of the data needs to be addressed. The authors point to the impossibility of producing complete catalogues, but suggest that virtually complete listings of the most destructive events can be achieved (D1.1). This is largely true, but conspicuous gaps in the record do need to be considered, even if the comments that can be made are relatively few. Taking the catalogue at face value, the peaks in reporting occur in the 6th century (11 events), the 11th–12th centuries (respec-
tively 10 and 12 events) and again in the 19th century (24 events); the record for the 17th and 18th centuries, however, is respectively only 3 and 5 earthquakes. To what extent is this pattern a genuine reflection of phases of activity and quiescence, or of documentary production; and is the problem of the absence of data genuinely caused by a lack of sources, or by the uneven coverage of sources available in the work of secondary compilations?

Despite the problems that I have drawn attention to, possibly at indecent length, this publication is part of a potentially useful and necessary exercise. The Reinsurance Offices Association should recognise the inherent problems in confining such an investigation to existing catalogues, and the need for a longer-term, critical accumulation of reliable earthquake data. Failure to rely on primary sources of information tends ultimately to undermine the reliability and credibility of the estimates of earthquake risk in the Middle East region.

References


Charles Melville
Faculty of Oriental Studies
University of Cambridge
Sidgwick Avenue
Cambridge CB3 9DA


Very little has appeared in the press in the West on the Ethiopian villagisation programme, the objective of which is to concentrate the scattered rural population numbering some 38–39 million into centralised villages each containing from 500 to 2500 people. Currently, about half the population has already been villagised and, when complete, the programme will have transformed the rural scene. This detailed report from Survival International attempts an assessment as to whether this immense upheaval will ultimately benefit the people involved or whether it will prove to be to their detriment.

The situation in Ethiopia is complicated as it is a multi-ethnic state. There are over 100 tribes or peoples speaking more than 70 languages and the country has never been tied together over a lengthy period by a foreign colonial power which has then retreated. Only the Amhara have tended to dominate the rest. These people gave rise to the ancient kingdom of Abyssinia, which occupied the northern part of the present state and which subsequently conquered and occupied the southern two-thirds. After the anti-imperial revolution of 1974, the military 'Derg' (Committee) consolidated its power and began to introduce a socialist programme. Greeted at first with enthusiasm, disillusionment eventually set in and now the government is faced with large-
scale rebellions and many ‘liberation fronts’ related to the basic tribal structure.

Villagisation programmes can be categorised into three types: those where the aim is the control of the population in a military situation, those where the aim is a socio-economic development of a society, and those which claim or attempt to do both. Villagisation as a means of military control is long established: it was used by the British in Kenya in the 1950s and the Americans in Vietnam in the 1970s. Similarly, villagisation for socio-economic reasons has been tried in South Africa by Cecil Rhodes, in Tanzania by Nyerere and in the Sudan by the British.

There seems little doubt that the villagisation programme introduced by the Derg in Ethiopia has as its main motive the military aspect in an attempt to control the population by isolating the insurgents and cutting off their supplies. The report from Survival International finds little evidence of the benefits — schools, clinics, hospitals, shops, etc. — which are supposed to flow from the villagisation programme. Official figures show that few services have as yet been provided in the large number of villages that have been created.

Although the promoters of the scheme probably believe they are engaged in a civilising mission and are creating a new society, the evidence gathered points to a destruction of the traditional tribal system coupled with a fall in agricultural production and an ecologically damaging effect on the landscape. Overgrazing, forest depletion, soil and surface erosion, pollution and water supply problems, and health hazards have all appeared in areas where previously they were non-existent. Furthermore, the psychological effect of being uprooted and moved to an alien environment hardly promotes happiness among the natives. Reading this report, it is not difficult to see why Survival International, with its stated aim of helping tribal peoples to exercise their right to survival and self-determina-

W.G.V. Balchin  
10 Low Wood Rise  
Ilkley  
LS29 8AZ


SADCC (the Southern African Development Co-ordination Conference) includes nine nations, with a combined population of 60 million. The area overall has a high (80 per cent) dependence on wood fuels for energy. This study aims at developing a fuelwood policy for the region, but also makes an important contribution to our understanding of rural development generally.

The ‘fuelwood trap’ of the title is to assume that this is an obvious problem with a simple solution: often village woodlots, or ‘Improved cookstoves’ are advocated. The authors correctly insist that fuelwood must be seen as part of a much wider problem, and must be set within rural production systems. Also, in common with all rural development, what is needed is a long-term approach, and one that begins with the needs and perceptions of local people. This book is strong on the value of starting with what people know and do, without exaggerating their knowledge, nor pretending that all solutions can be found at the village level. Local people should define the problem, and, suggest ways of action, rather than a top-down approach be
imposed, as these have almost invariably been failures. The authors are part of a wide group that emphasises this approach (including such pioneers as Paul Richards, Robert Chambers and Dennis M. Warren) but the value of local knowledge, and local participation, still needs to be pointed out.

To achieve this aim, forestry departments also need to change, and to consider local people rather than just trees (often exotic species, in plantations). They need to have broad goals and to ensure that particular attention is paid not only to local people but especially to women, on whom falls so much of the burden of fuelwood collection.

There is useful consideration of institutional constraints: responsibility is often shared between many ministries — Environment and Natural Resources, Forestry, Energy, and Agriculture, with little co-ordination. There is a need for interactions between the informal and formal sectors, a good example being the development of cookstoves in Kenya. And non-governmental organisations frequently have important roles to play.

About a quarter of the book is devoted to a thoughtful analysis of 'Urban energy options', showing the importance of markets and transport, and examining prospects for fuel-switching, as well as of supply enhancement.

This is an honest book, often pointing out that 'we simply do not know' (because of lack of good data) and using pertinent examples from Malawi, Zimbabwe and other SADCC nations. The useful appendices include one on 'Eucalyptus: Friend or Foe' and another called 'Beware the Miracle Tree'. This is an unpretentious and a practical book, one that is well grounded on a real understanding of the energy problem. It shows the complexities of rural development, and stresses the need for a comprehensive view, as well as the necessity of taking local people into account.
reviewing disaster preparedness and drawing up risk maps will be taken up unless communities are under especially high-risk and have already suffered from a previous disaster. The first two chapters and selected annexes might make a useful handbook for quick reference. The illustrations of people used throughout the text, while no doubt attempting to be adaptable to all cultures and societies, would be less off-putting if their facial features were included.

Claudia McConnell
Lecturer in Health and Development
Department of International Community Health
Liverpool School of Tropical Medicine
Pembroke Place
Liverpool L3 5QA
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