

OFFICE OF THE UNITED NATIONS DISASTER RELIEF CO-ORDINATOR
Geneva

Shelter after Disaster

Guidelines for Assistance



UNITED NATIONS
New York, 1982

Foreword

Since its creation in 1972, the Office of the United Nations Disaster Relief Co-ordinator (UNDRO) has striven to assist nations of the world in their struggle against natural disasters, and other disaster situations, through a two-pronged strategy: firstly through international disaster relief co-ordination, and secondly through pre-disaster planning in order to mitigate the risks and adverse consequences of disasters. In the field of pre-disaster planning UNDRO has organized training seminars and work-shops, provided technical assistance to disaster-prone countries, and has published studies on the many aspects of disaster preparedness, prevention and mitigation.

The origins of the present study go back to 1975 when the Co-ordinator decided that a major review of emergency shelter provision was needed, particularly with a view to giving the United Nations family and Member States guidance on this extremely difficult subject. The Government of the Kingdom of the Netherlands, expressing its concern for the subject, funded the UNDRO study. The study was carried out in two phases: the first from July 1975 to September 1977, and the second from November 1979 to May 1982. During the first phase the bulk of the evidence was assembled and analysed. The second phase of the study saw the development of planning and policy guidelines for emergency shelter provision, and post-disaster housing more generally.

This has been both a difficult and challenging study, for the evidence gathered has clearly pointed out the need for some important attitudinal shifts among the majority of groups providing assistance following disasters. Many conventional and preconceived notions have been questioned and new ideas proposed.

The publications can be characterized as follows:

It is probably the first comprehensive study to be published on disasters and shelter (many books and articles having been published on limited or special aspects of the problem, usually in relation to specific events).

It encompasses the entire disaster spectrum: disaster preparedness; disaster relief; post-disaster reconstruction, and prevention.

It addresses one of the most complex, controversial and least understood aspects of disaster management and planning.

It analyses the problem of shelter after disaster from the point of view of the survivor, rather than through the traditional perspective of the donors and other assisting groups.

It is evident that in the past decade the understanding of disasters and their consequences has improved. In the face of the mounting social and economic costs of natural disasters in the third world, the international community (donors and recipients of aid alike) have made considerable efforts to improve the quality of

disaster relief, preparedness and prevention; to improve our understanding of natural hazards; to estimate the risks resulting therefrom more accurately; and to take adequate precautionary or preventive measures ahead of disasters. Progress has, nevertheless, been slow: population growth, rapid and uncontrolled urbanization, degradation of the environment, economic recession, and poorly co-ordinated development planning have, together, conspired to outstrip progress in the control of disasters. It is certain that disasters are not merely "acts of God" but are aggravated by human error and lack of foresight; that disaster relief can be made ever more effective through systematized planning and management; and that pre-disaster planning does help, at least, to reduce some of the harshest effects of disasters. Therefore, whatever the difficulties, efforts to improve disaster relief and pre-disaster planning must continue unabated.

It can be said with some assurance that relief management in the fields of medicine, health, and nutrition has, nevertheless, significantly improved over the last decade. The benefits of the lessons learned from major disasters during the 1970s and early 1980s are beginning to show. However, there remains one particular sector in which too little progress has been made, and in which many conservative and obsolescent attitudes survive, that is: emergency shelter, and shelter after disaster in a more general sense. Perhaps the core of the problem lies in the fact that, although housing is one of the most complex and intractable problems of development, it is also one upon which everyone has his or her personal opinion, thus creating much confusion between objective and subjective evaluations. The least understood of all issues is that a house is merely the end-product of a long chain of social, economic, technological, environmental, political and other interactions. In some countries the housing issue is not "the house", but land and utilities (water, electricity, roads, transport, etc.). In others, the poorest, housing has a lower priority than employment and nutrition. In no more than a handful of countries can the house, as a product, be said to be of primary concern. Until it is fully and widely understood that shelter is a "process" rather than a "product", many housing programmes, however well-meaning, will fall short of expectations—especially in the developing countries. The foregoing reasoning is as true for the shelter aspects of disasters as for the "normal" housing process.

This study is designed to provide policy and programme guidelines on emergency shelter and post-disaster housing for disaster management personnel within the governments of disaster-prone countries; the non-governmental, voluntary and relief organizations; donor governments; the United Nations system, and other international organizations. It should be emphasized that while considered to be a technical study, it is *not* a document on engineering or building construc-

tion—for reasons well explained in the text—notably because precise specifications for shelter can only be given in a precise, local context. This study, nevertheless, provides the foundation for such action.

The study was prepared by the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), under the responsibility of Mr. Ludovic van Essche, Senior Co-ordination Officer. The consultants to the study were Mr. Ian Davis, Principal Lecturer, Oxford Polytechnic, United Kingdom, and Mr. Frederick Cuny, Intertect, Dallas, Texas, USA. Contributions were also received from Mr. Paul Thompson (Intertect), Mr. Frederick Krimgold, National Science Foundation, Washington, D.C., USA; and Mr. Aloysius Fernandez, New Delhi, India.

In its closing stages, the draft study was reviewed by an International Expert Group who met in UNDRO, Palais des Nations, Geneva, in December 1981. Members of the Group were: Dr. Otto Koenigsberger (Chairman), Emeritus Professor of Development Planning, University College, London, United Kingdom; Mr. Jürg Vittani, a senior relief official of the League of Red Cross Societies, Geneva; Dr. Julius Holt, International Disaster Institute, London, United Kingdom; Dr. Caroline Moser, Development Planning Unit, University College, London, United Kingdom; Professor Aydin Germen, King Faisal University, Dammam, Saudi Arabia; Mr. Jai Sen, UNNAYAN, Calcutta, India.

The representatives of the Netherlands attending the Meeting were Ms. Valery Sluyter, Ministry of Foreign Affairs, The Hague, and Mr. L. J. Van den Dool, First Secretary of Embassy, Permanent Mission of the Kingdom of the Netherlands to the Office of the United Nations and other International Organizations at Geneva.

Observers attended from the United Nations High Commissioner for Refugees (UNHCR); the United Nations Centre for Human Settlements (Habitat), and the World Health Organization (WHO).

The Office of the United Nations Disaster Relief Co-ordinator (UNDRO) wishes to express its deep appreciation to the Government of the Kingdom of the Netherlands for its unfailing commitment to, and support for, this important and complex study.

It is hoped that this publication will be of assistance to those it addresses, and a source of inspiration for all those concerned with the problems of shelter in the developing countries. Readers' comments and suggestions are invited, and should be addressed to UNDRO, United Nations, Palais des Nations, Geneva, Switzerland.

UNDRO

Geneva, May 1982

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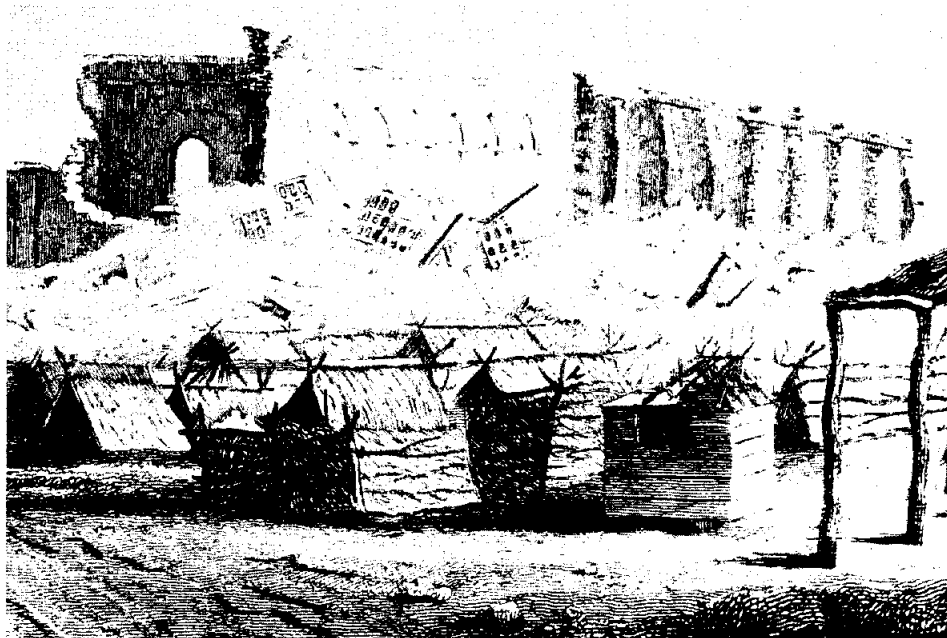
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The Concepcion Earthquake, Chile, 1835



"... Much misery was alleviated by the good conduct and extreme hospitality of the inhabitants of Concepcion. Mutual assistance was everywhere rendered, and theft was almost unknown. The higher classes immediately set people to work, to build straw-covered huts and temporary houses of board, living meanwhile in the open air under trees. Those who soonest obtained or contrived shelter, collected as many about them as they could assist, and in a very few days all had temporary shelter, under which they tried to laugh at their misfortunes and the shifts to which they were reduced. ..."^a

— Capt. Robert Fitzroy, hydrographer accompanying Charles Darwin on the scientific voyage of *HMS Beagle* (1831-1836). Drawing by the expedition artist. Probably the first careful record of post-disaster shelter.

^a Keynes, R. D., ed., *The Beagle Record*, selections from the original accounts of the voyage of *HMS Beagle*, Cambridge University Press, 1979, pp. 255-7.

Chapter I

CONTEXT AND OBJECTIVES

"A Committee of voluntary agencies writing to the President of Guatemala two years after the earthquake of 4 February 1976 admitted that many mistakes had been made and listed the following five as the most important: too much aid was given away; too many of the houses constructed were merely of an emergency type; some organizations used large numbers of foreign volunteers; too much was done under pressure and without proper consultation, so that the victims became mere spectators of the work carried out rather than participants; a lot of reconstruction work was undertaken without first consulting the Government's Reconstruction Committee."¹

Of these five "mistakes", it will be noted that two are specifically concerned with shelter and housing provision and that the others have a clear bearing on the subject, highlighting yet again the importance of this area of disaster relief and raising a number of important questions:

How should disaster assistance be dispensed? Should it be simply given away, subsidized or marketed in the affected area?

How can outside aid be balanced with local self-help?

What type of housing or shelter should be provided—permanent or emergency?

How can the active participation of the affected community be mobilized during the post-disaster pressure for swift action?

How can the government retain control of housing reconstruction?

Though the literature on these and other topics concerned with shelter after disaster is extensive, it is scattered and, therefore, often inaccessible, especially to assisting groups seeking guidelines and advice.

OBJECTIVES

The present study aims to remedy these problems, its most distinguishing feature being the emphasis on shelter needs from the standpoint of the survivor receiving aid. It also seeks to assist disaster-prone countries (especially the developing countries), and all assisting groups, in solving as effectively as possible the problems of emergency shelter and post-disaster housing through the emergency and reconstruction periods. By the same token, therefore, this study is also a guide to pre-disaster planning, in anticipating future disasters.

SCOPE

In so far as this study is comprehensive, it has to maintain a certain level of generality. It does not, therefore, address problems of building construction and engineering which, in the view of UNDR0, can only be identified and solved within a specific locality and context. As already emphasized in the foreword, this is a policy and planning document, not a building manual. Some of the findings of this study are relevant to man-made disasters (for example, refugee situations) and to long-onset disasters (such as droughts), but its main concern is with fast-impact disasters (such as earthquakes, floods, cyclones). Although it has been found essential to view emergency shelter provision in the wider context of "normal" housing, it must be emphasized that the primary concern of the study is with the immediate shelter needs of survivors following disaster.

AUDIENCE

This publication is intended for all officials and technicians (professional staff) who are responsible for planning and executing post-disaster shelter programmes: government planners, administrators and programme managers at the national and regional levels in disaster-prone developing countries; the experts and technical advisers of the international agencies (and the United Nations system in particular); officials and field staff of non-governmental, voluntary organizations; relief agencies; and donor governments. Clearly, these groups will be concerned with technical matters as well as with policy development and programme management. Since these aspects are closely interwoven, no attempt has been made to separate them in this study, although it is recognized that in practice they may be the concern of different people and agencies, at different levels of responsibility. It is important to emphasize that the recommendations are deliberately *not* intended for use at the local (or primary) level of field implementation, since detailed guidelines (which are essential for all disaster-prone areas) can *only* be formulated by local personnel in the light of local conditions. However, the structure of the guidelines as a whole will provide an appropriate model for local adaptation.

FOCUS

Although many of the guidelines may be appropriate to some industrialized societies, the main concern of the study is with developing countries. The emphasis is placed on the needs of the poorer communities, both urban and rural, for they are in the majority today. These communities, for the most part, preserve many links with tradition, particularly when it comes to housing. Therefore, self-help and popular participation con-

¹ Norton, Reggie, "Disasters and Settlements," *Disasters*, vol. 4, No. 3, 1980, p. 339.

stitute one of the strongest threads running through the study. In fact, the evidence suggests that the modern industrialized sector (large firms of building contractors, prefabrication, etc.) has a relatively minor role to play in the total reconstruction of housing after disaster in developing countries. The very general character of the guidelines must be emphasized in view of the variety of political systems reflected in the evidence collected. Therefore, some of the advice (for example, on the role of private sector or problems of land acquisition and reform) will be of limited application, again pointing to the need for specific guidelines to be developed at the local level. It is further recognized that in urban areas, in particular, the affected community may be highly heterogenous in terms of religious beliefs, social status, ethnic background and income level. Again these differences can only be accommodated in locally developed guidelines. It is hoped that the formulation of local guidelines will be an important and active follow-up aspect of the present study.

STRUCTURE OF THE GUIDELINES

The analysis of the evidence gathered points to fourteen basic principles. These are listed in chapter II,

forming the foundation of the study, and serving as a brief summary of its recommendations. Chapter III presents the findings and guidelines for emergency shelter, and chapter IV does so for post-disaster housing (reconstruction). Chapter V summarizes the most important conclusions to be drawn from the study. It calls special attention to the rising expectations of the developing countries, the accountability of assisting groups toward them, and the need to develop local guidelines.

The following time phases are used, although it is recognized that they will vary according to the local conditions and type of disaster:

Phase 0—Pre-disaster phase

Phase 1—Immediate relief period (impact to day 5)

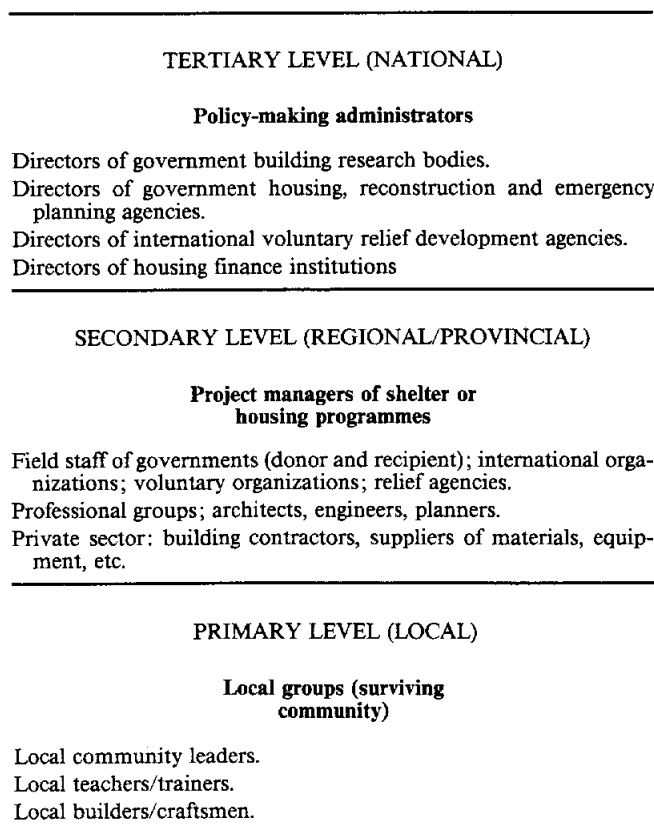
Phase 2—Rehabilitation period (day 5 to 3 months)

Phase 3—Reconstruction period (3 months onward)

It is realized that these phases are somewhat arbitrary, but in the case of disasters of sudden onset they are adequate for descriptive purposes.

Lastly it is important to mention that the evidence upon which all the findings of the study are based can be found in appendix A containing 11 case study summary sheets.

CHART 1
Audience



The guidelines in *Shelter after Disaster* are focused on tertiary and secondary levels of audience. The production of guidelines for the local (primary) level must be undertaken locally by personnel from the regional/provincial (secondary) level, working in close collaboration with local groups. *Shelter after Disaster* may serve as a model for the preparation of local guidelines. Section 5.4—Advice for the local level—has been written to assist in this task. The guidelines in *Shelter after Disaster* are focused on tertiary and secondary levels of audience.

Chapter II

PRINCIPLES

1. *Resources of survivors*

The primary resource in the provision of post-disaster shelter is the grass-roots motivation of survivors, their friends and families. Assisting groups can help, but they must avoid duplicating anything best undertaken by survivors themselves.

2. *Allocation of roles for assisting groups*

The success of a relief and rehabilitation operation depends on the correct and logical distribution of roles. Ideally, this allocation should be undertaken by the local authorities who are best qualified to decide who should do what, when and where. However, if the local administration is too weak to assume this responsibility, the priority must be to strengthen it.

3. *The assessment of needs*

The accurate assessment of survivors' needs is in the short term more important than a detailed assessment of damage to houses and property. Partial or inaccurate assessments of human needs by assisting groups have been a frequent cause of past failure of relief efforts.

4. *Evacuation of survivors*

The compulsory evacuation of disaster survivors can retard the recovery process and cause resentment. The voluntary movement of survivors, where their choice of venue and return is timed by their own needs, on the other hand, can be a positive asset. (In the normal course of events some surviving families may seek shelter for the emergency period with friends and relatives living outside the affected area.)

5. *The role of emergency shelter*

Assisting groups tend to attribute too high a priority to the need for imported shelter as a result of mistaken assumptions regarding the nature, and, in some cases, relevance of emergency shelter.

6. *Shelter strategies*

Between emergency shelter provision and permanent reconstruction lies a range of intermediate options. However, the earlier the reconstruction process begins, the lower the ultimate social, economic and capital costs of the disaster.

7. *Contingency planning (preparedness)*

Post-disaster needs, including shelter requirements, can be anticipated with some accuracy. Effective contingency planning can help to reduce distress and homelessness.

8. *Reconstruction: the opportunity for risk reduction and reform*

A disaster offers opportunities to reduce the risk of future disasters by introducing improved land-use planning, building methods, and building regulations. These preventive measures should be based on hazard, vulnerability and risk analyses, and should be extensively applied to all hazardous areas across the national territory.

9. *Relocation of settlements*

Despite frequent intentions to move entire villages, towns and cities at risk to safe locations, such plans are rarely feasible. However, at the local level a disaster will reveal the most hazardous sites (i.e. earthquakes faults, areas subject to repeated flooding, etc.). Partial relocation within the town or city may therefore be both possible and essential.

10. *Land use and land tenure*

Success in reconstruction is closely linked to the question of land tenure, government land policy, and all aspects of land-use and infrastructure planning.

11. *Financing shelter*

One of the most important components of a post disaster shelter programme is its financing system. Out-right cash grants are effective in the short term only, and can create a dependency relationship between survivor and assisting groups. It is far more advantageous for both the individual and the community to participate in the financing of their own shelter programmes, especially permanent reconstruction.

12. *Rising expectations*

Apart from the tendency of prefabricated, *temporary* housing to become *permanent* because of its high initial cost, and in spite of its frequent rejection on socio-cultural grounds, temporary shelter, nevertheless, fre-

quently accelerates the desire for permanent modern housing, well beyond reasonable expectation. It is important for assisting groups not to exacerbate social and economic tensions by such provision where there are widespread and chronic housing shortages among low-income and marginal populations.

13. *Accountability of donors to recipients of aid*

Since the most effective relief and reconstruction policies result from the participation of survivors in determining and planning their own needs, the successful

performance of assisting groups is dependent on their accountability to the recipients of their aid.

14. *Guidelines for the local level*

Guidelines on emergency shelter and post-disaster housing for individual communities can only be formulated by qualified, local personnel, in the light of the prevailing local conditions (types of hazard, building traditions, economic base, social system, etc.). Such guidelines can, however, be modelled on the structure of this study.

Chapter III

EMERGENCY SHELTER

3.1. THE NEEDS AND RESOURCES OF SURVIVORS

PRINCIPLE: The primary resource in the provision of post-disaster shelter is the grassroots motivation of survivors, their friends and families. Assisting groups can help, but they must avoid duplicating anything best undertaken by survivors themselves.

Audience

- Private sector: Manufacturers/contractors
- Professionals: Architects/planners/engineers
- Policy-making administrators: National (tertiary) level
- Project managers of post-disaster shelter/housing projects: Regional/provincial (secondary) level

Time phases

- Pre-disaster phase—Preparedness/mitigation/risk reduction
- Phase 1—Immediate relief period (impact to day 5)
- Phase 2—Rehabilitation period (day 5 to 3 months)
- Phase 3—Reconstruction period (3 months onward)

RESPONSE

In the disasters studied, the primary response to shelter needs has been provided by the survivors themselves. The secondary response has been that of local organizations, particularly those “in place” at the time of the disaster. The least effective response has inevitably come from expatriate organizations with no prior experience of the disaster-affected area. In no case have these organizations provided more than 20 per cent of the local shelter response. This percentage relates to both shelter units and materials provided in the emergency phase².

The factors limiting the participation of external assisting groups include:

1. *Time.* External organizations cannot move fast enough to participate fully during the emergency period. It is not only extremely difficult to mobilize external resources quickly, but the enormous problems of shelter

distribution in the stricken area limit the possibility of delivery within the emergency period.

2. *Scale of disaster.* The magnitude of many disasters, especially in relation to numbers affected and the cost of meeting their needs, clearly prohibits any major role for imported shelter. No expatriate agency has the resources to meet the massive needs which can be, and are, more often best met by local resources.

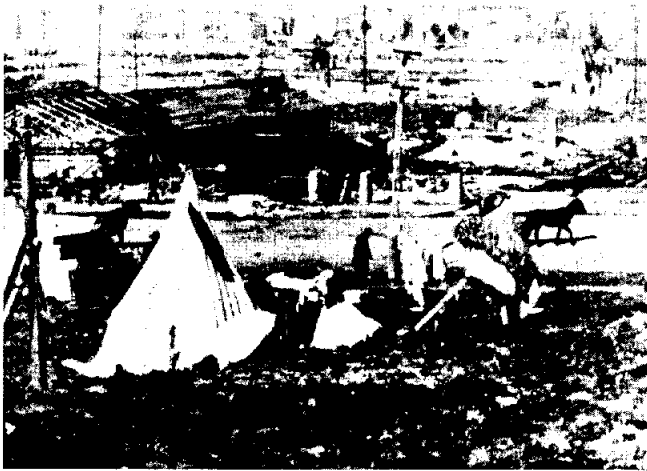
3. *Self-reliance.* The peoples of developing countries are more self-reliant in the basic skills of shelter construction than their counterparts in the industrialized countries. This is particularly true in rural areas where, in any case, families have always built their own houses. If the nature of the disaster allows them to stay in place, they can, in principle, rebuild their homes quickly, although they may require technical and material assistance.

AVAILABILITY OF BUILDING MATERIALS

In every type of disaster and post-disaster situation, a wide variety of building materials is available for emergency shelter and housing reconstruction programmes.³

² The ratio of locally provided shelter to external provision bears out the statistics issued by the Office of Foreign Disasters Assistance of the United States Government indicating that, in a 10 year period (1965-1975), for every dollar provided in disaster assistance from external sources, 42 dollars were provided *within* the countries affected. [Committee on International Disaster Assistance (CIDA) The United States Foreign Disaster Assistance Programme National Academy of Sciences, Washington D.C., USA, 1978.]

³ Even in international refugee situations, where the refugees themselves may not have access to the normal housing materials supply market, the host government and supporting international and voluntary agencies will have access to local resources for emergency shelter and housing.



Improvised shelter following the 1906 San Francisco earthquake.
(Credit: Bear Photographic Services, San Francisco)

Following every type of disaster, one or more of the following sources can be used to obtain substantial amounts of the materials needed for construction:

Inventories of unused materials that existed before the disaster.

Indigenous materials (both commercially and non-commercially available).

Materials salvaged from the rubble.

Of the above, the latter two are the most important for widespread housing programmes. The vast majority of the urban poor usually rebuild from materials obtained from non-commercial sources. Housing in rural areas is most likely to be based on indigenous materials. Industrially manufactured building materials are those which normally survive a disaster in the best condition and are, therefore, the best to salvage from the rubble.

In studying the major disasters which have occurred during the past ten years, causing extensive housing losses, it has been found that there have been enough resources from indigenous and salvaged materials to rebuild nearly three-quarters of the housing to pre-disaster standards. Indeed, for houses rebuilt to a structurally safer standard, the same materials can be used in over ninety per cent of cases, thereby substantially reducing the costs of reconstruction. Yet, authorities and agencies responsible for handling relief and reconstruction efforts have repeatedly overlooked these resources, and have often, and inadvertently, taken steps to destroy them.

The reasons are:

That few assisting groups have prior housing or building experience and, therefore, are not familiar with the types of materials required or available.

That indigenous and salvageable materials are often overlooked when the authorities or assisting groups reject pre-existing building standards.

That housing is often over-emphasized by assisting groups, though, as will be seen throughout this study, it is not always the highest priority item for low-income families in a developing country. They may not, therefore, be willing to invest substantial amounts of money, time or effort into building formal structures.

These problems indicate the need:

1. *To understand the local building process which exists before a disaster.* The most effective assisting group will be one which is conversant with the pre-existing norm, and draws upon this understanding in the development of the post-disaster programme.

2. *To survey resources available after the disaster.* This will probably require the employment by assisting groups of personnel with experience of local building traditions.⁴

SURVIVORS' PRIORITIES

(See table 1)

Survivors show certain distinct preferences for their shelter in the aftermath of disaster. The evidence suggests that their priorities are:

1. To remain as close as possible to their damaged or ruined homes and their means of livelihood.
2. To move temporarily into the homes of families or friends.
3. To improvise temporary shelters as close as possible to the site of their ruined homes. (These shelters frequently evolve into rebuilt houses.)
4. To occupy buildings which have been temporarily requisitioned.
5. To occupy tents erected in, or next to, their ruined homes.
6. To occupy emergency shelters provided by external agencies.
7. To occupy tents on campsites.
8. To be evacuated to distant locations (compulsory evacuation).

⁴ In India in 1971, at the beginning of relief operations for the Bengali refugees, none of the major agencies involved had any prior housing experience in India. At the peak of the influx of refugees in August 1971, only three of the ten largest agencies employed housing or emergency shelter specialists. Over the years, the situation has not significantly improved: in reconstruction operations in Guatemala, 1976, out of the forty agencies involved in reconstruction, only 5 had prior housing experience in Guatemala; and of the remainder, only 7 had staff with prior low-cost housing experience. *Reconstruction of Housing in Guatemala: A Survey of Programs Proposed after the Earthquake of February 1976*, Charlotte and Paul Thompson, UNDR0/Intertect, 1976.

TABLE I
Shelter priorities of disaster survivors relative to roles of assisting groups

Preferences of disaster survivors in order of priority	Roles of assisting groups							Examples of this preference
	International agencies	External donor governments	External voluntary agencies	Foreign experts	Local military	National government administration	Local voluntary groups	
1. Remain as close as possible to damaged or ruined home								Guatemala 1976
2. Move into the home of families or friends								Skopje, Yugoslavia 1963 Managua, Nicaragua 1972
3. Improvise temporary shelters close to ruined homes								Guatemala 1976, Peking alert, China 1976
4. Occupy buildings temporarily requisitioned								Van, Turkey 1976
5. Occupy tents near ruined home								Gediz, Turkey 1970 Lice, Turkey 1975 Van, Turkey 1976
6. Occupy emergency shelters provided by external agencies								Chimbote, Peru 1970 Gediz, Turkey 1970 Managua, Nicaragua 1972 Lice, Turkey 1975
7. Occupy tents camp sites								Guatemala 1976
8. Compulsory evacuation to distant locations								Managua, Nicaragua 1972

FUNCTIONS OF SHELTER

Emergency shelter serves several vital functions (*not* listed in order of priorities):

Protection against cold, heat, wind and rain.⁵

Storage of belongings and protection of property.

The establishment of territorial claims (ownership and occupancy rights).

The establishment of a staging point for future action (including salvage and reconstruction, as well as social reorganization.)

⁵ Evidence from two severe winter earthquakes (Van, Turkey, 1976 and Southern Italy, 1980) shows how families take the initiative in reducing the risks of exposure, by lighting fires made from earthquake debris, digging in to form semi-underground structures, thus securing ground warmth; or by erecting several tents inside each other to form a cellular insulation skin. This shows that the majority of survivors who are frequently from the poorest sections of the community are the most resourceful. See Ressler, Everett. *Issues Related to the Provision of Emergency Shelter in Winter Conditions (Report on visit to Caldivan Earthquake, Eastern Turkey)*. UNDRO/Intertect, 1977.

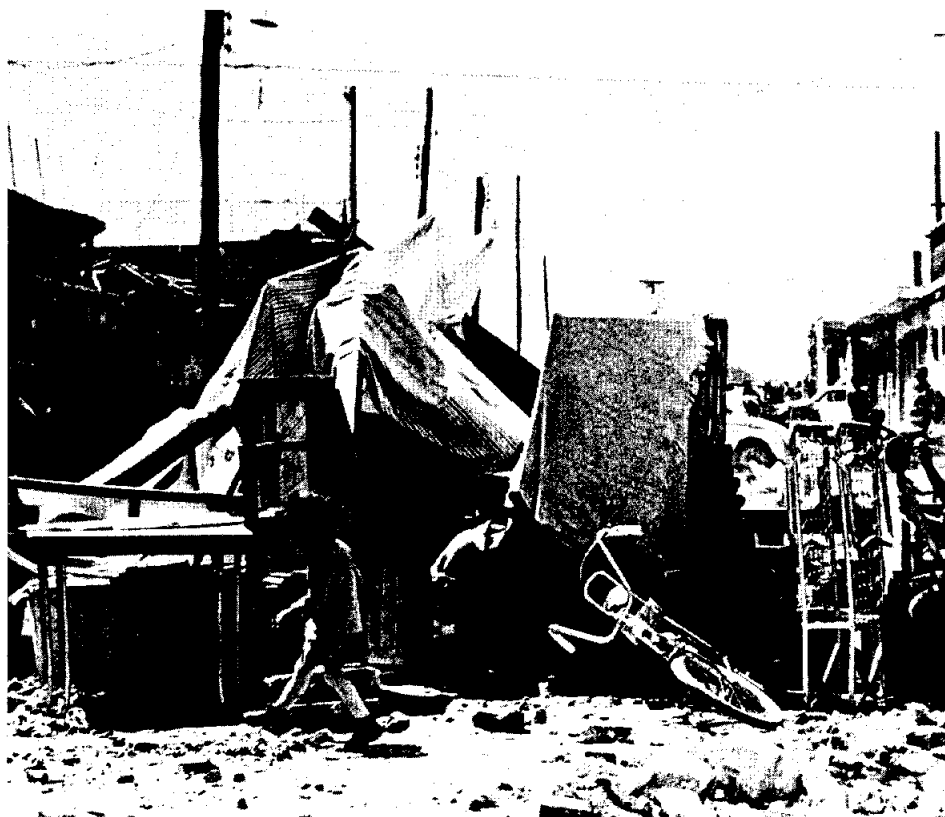
Emotional security and the need for privacy.

An address for the receipt of services (medical aid, food distribution, etc.)

Shelter within commuting distance of employment.

Accommodation for families who have temporarily evacuated their homes for fear of subsequent damage.⁶

⁶ A major earthquake and its aftershocks may result in families needing temporary accommodation for a long period. Normally this form of shelter will be adjacent to their homes, with many activities still taking place inside the house but sleeping occurring in cars, tents or improvised shelters. Following the 1976 Friuli earthquake in Italy, many families with undamaged, or partially damaged homes moved out into temporary accommodation. Whilst this occurred, a second earthquake took place, causing additional damage to the already weakened structures but minimal loss of life due to evacuated houses. A further effect of earthquakes is that, in certain instances, surviving families have shown reluctance to begin salvaging materials from the rubble until the threat of a secondary disaster has passed. In the case of floods, families will be displaced for as long as it takes the flood waters to retreat. On their return, the problems of inundated soil, contaminated water supply etc., normally delay the repair or reconstruction of buildings.



(Credit: OXFAM)

A key function of emergency shelter is the storage of salvaged belongings. This photograph was taken after the Guatemalan earthquake of 1976.



Improved shelters in Guatemala, made from any waste materials: cardboard boxes, earthquake rubble, etc.

Policy Guidelines

Policies to avoid

1. Actions which duplicate the efforts of survivors.
2. Bulldozing rubble and burning timber from damaged houses, which could otherwise be recycled into new homes.
3. Importing labour for reconstruction when there is ample labour to be found locally.
4. Importing building materials which can be obtained locally.
5. Compulsory evacuation, especially of women and children: although this can temporarily reduce the pressure on local resources, it can cause social misery and apathy.
6. Relocation of survivors on land which is remote from work, markets, schools and other social and economic needs.
7. Creating large emergency campsites with risks of adverse social and environmental effects.
8. Building imported or prefabricated temporary shelters unnecessarily.

Policies to adopt

1. *Encouragement of people to participate in the assessment of their own needs and resources*

The objective is to minimize dependency on outside support, and concentrate official effort on identifying

gaps and unmet needs with survivor participation. Advice on local housing needs is best obtained from local builders, architects or engineers. In some situations there may be local housing institutions with knowledge of building traditions and resources. Official groups, such as local government housing officers and public works departments, will have knowledge of the local housing process. Advice on how to make low-cost housing safe against future hazards may need to be introduced, but there is normally a shortage of local expertise on this subject.

2. *Provision of materials and tools*

Establish programmes which make shelter materials available, such as blankets, plastic sheeting, roofing sheets, and locally available or traditional building materials. In addition, tools for building and clearing rubble are always needed.

3. *In cold climates or seasons, keeping stocks of robust "winterized" tents*

This policy should be balanced against others advocated in this study: in many instances where the climate is mild or warm, alternative strategies can be adopted to mobilize local resources for rapid reconstruction.

4. *Provision of transport for voluntary evacuation*

Families wishing to leave the affected area to stay with friends or relatives who can receive them temporarily, should receive transport.

5. *Requisition of public or community buildings*

Public buildings such as schools, churches, community halls etc. can fulfil an important function in providing emergency accommodation for homeless families. Such buildings should be earmarked and checked by qualified civil engineers for their structural resistance to the prevailing natural hazards. The maximum magnitude of hazard against which to check these buildings should correspond to the expected magnitude of hazard for a return period equivalent at least to the economic life of the building in question.

6. *Cash grants and sale of building materials*

Where stockists are still functioning, the provision of cash grants, or low-interest loans to enable survivors to buy building materials and tools, can be a highly effective policy. However, prior to embarking on such programmes, assisting groups must ascertain the scale of needs in relation to local resources: a small community may be able to obtain adequate supplies from normal stockist, but in a major disaster shortages may rapidly occur with consequent price rises.

Where the supply of materials or tools is limited, assisting groups, including the local government, should negotiate the block purchase of supplies and organize their transport and distribution to the affected area. Various approaches have been adopted to control the prices of essential materials (such as governmental price controls), but these interventions in a market economy may result in further shortages unless it is financially advantageous to the private sector to increase supplies or production substantially.

It should be noted that the distribution of essential shelter supplies is more effective if they are sold rather than given away, though subsidies may be necessary in cases of severe hardship. Although assisting groups may find selling more complicated than free disposal, it is better for the following reasons:

It retains the dignity of the survivor, who will be a *participant* rather than a *victim*, if he purchases goods himself.

Free distribution creates problems of dependency.

Free distribution can have serious adverse effects on local stockists trying to sell their goods in a normal manner (they themselves may also be victims of the disaster).

The money from the sale of shelter goods is needed by agencies for other vital purchases.

Although it is better to offer loans than to make outright cash grants, there are nevertheless certain instances when cash grants may be an important and effective form of aid:

To near destitute people, where they form so small a percentage of the population that they will not significantly drive up prices of commodities.

To labourers, in lieu of wages lost following disaster, in order to enable them to salvage belongings and materials, and build shelters, or begin to reconstruct their homes.

To poor artisans, to replace destroyed equipment essential to their livelihood; also possibly in lieu of income lost as a result of goods destroyed or damaged in the disaster.

To low income groups across a wider spectrum, when essential commodities are available in abundance in nearby, unaffected regions, and where the cash grant

is in effect a subsidy for the part of the price which traders add for increased transport costs.

7. Access to land for housing and resettlement

Authorities frequently hold the key to rapid recovery, and must recognise the need to make land available. Ideally such land should be as close as possible to original homes and means of livelihood, but in a less hazardous area. Inevitably this will require loans or subsidies since the new land will require purchase and development (see chapter IV).

Key References

- DAVIS, Ian, *Shelter after Disaster*, Oxford Polytechnic Press, Oxford, United Kingdom, 1978.
- HOWARD, Jim, and MISTER, Robert, "Lessons Learnt by OXFAM from their Experiences of Shelter Provision 1970-1978", *Disasters and the Small Dwelling*, Pergamon, Oxford, United Kingdom, 1981, pp. 159-167.
- MUIR-WOOD, Robert, "Hard Times in the Mountains", *New Scientist*, 14 May 1981, pp. 411-417 (Description of the Housing and Hazards Project of the International Karakoram Project 1980. This paper examines local perceptions of risk, priorities and coping strengths.)
- OLIVER, Paul, The Cultural Context of Shelter Provision, *Disasters and the Small Dwelling*, Pergamon, Oxford, United Kingdom, 1981, pp. 39-42.
- RIVERS, J. P. N., and BROWN, G. A., "Physiological Aspects of Shelter Deprivation," *Disasters and the Small Dwelling*, Pergamon, Oxford, United Kingdom, 1981, pp. 63-66.
- HOWARD, J., and SPICE, R., *Plastic Sheetting—Its Use for Emergency Housing and Other Purposes*, OXFAM, United Kingdom, 1981.

3.2 ALLOCATION OF ROLES TO ASSISTING GROUPS

PRINCIPLE: The success of a relief and rehabilitation operation depends on the correct and logical distribution of roles. Ideally this allocation should be undertaken by the local authorities who are best qualified to decide who should do what, when and where. However if the local administration is too weak to assume this responsibility, the priority must be to strengthen it.

Audience

- Private sector: Manufacturers/contractors
- Professionals: Architects/planners/engineers
- Policy-making administrators: National (tertiary) level
- Project managers of post-disaster shelter/housing projects: Regional/provincial (secondary level).

Time phases

- Pre-disaster phase—Preparedness/mitigation/risk reduction.
- Phase 1—Immediate relief period (impact to day 5)
- Phase 2—Rehabilitation period (day 5 to 3 months inclusive)
- Phase 3—Reconstruction period (3 months onward)

THE ROLE OF NATIONAL AND LOCAL GOVERNMENTS

Second in importance after the surviving community's own role, is that of the national and local government. The local government has the key task of allocating roles for all assisting groups. In undertaking this, it is likely to need assistance from the national government. In spite of the obvious risk of delegation of authority, this pattern of management has been found to be much more effective than centralised control. Local direction is frequently difficult for outside groups to accept, but it is vital to successful co-operation between survivors and assisting groups. The following list identifies the main components of the local government's responsibility in the recovery of shelter:

- Safeguard employment;
- Repair damaged infrastructure;
- Restore social services;
- Provide safe land for rebuilding;
- Assure a steady supply of building materials;
- Provide expertise to introduce safe construction and siting;
- Draw up contingency and preparedness plans for any future disaster.

One of the key responsibilities of local government, *clearing rubble*, must be considered where large numbers of houses have been destroyed, authorities may want to move into the area rapidly and bulldoze the rubble out of the disaster zone. Mechanized rubble-clearance usually takes place after earthquake and cyclonic storms. As heavy machinery (such as bulldozers, scrapers and tractors) becomes more readily available in developing countries, this kind of clearance is likely to

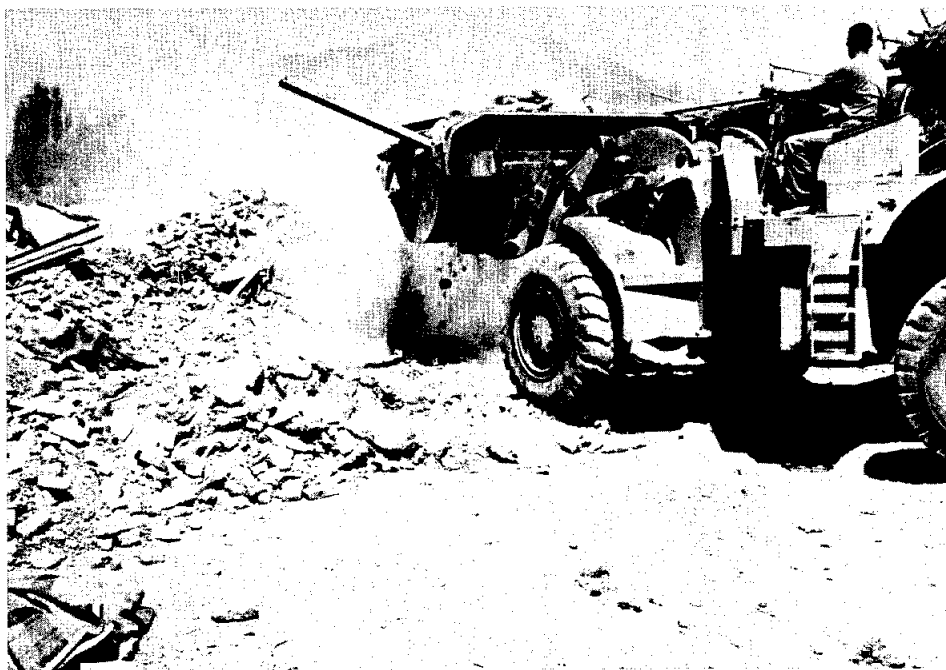
increase. Evidence from countries where massive bulldozing has occurred, shows that it plays a negative role for the following reasons:

1. *It destroys salvagable materials.* Millions of dollars worth of both manufactured and indigenous materials, which could be re-used, are often destroyed by bulldozing. Those responsible for carrying out bulldozing often do not realize the value of the materials being removed. These same materials can actually be re-used to build safer houses, if the appropriate building methods are adopted.

2. *The Removal or destruction of salvageable materials will delay reconstruction.* It may take months, or even years, for a low-income family to raise the money to acquire new materials. Even if a low-interest loan programme is started, it is rare for such a programme to be working within the first three months after a disaster. Survivors, especially those in towns, rely on access to salvageable materials for their initial building needs.

3. *It destroys landmarks.* The psychological need to be able to identify with pre-disaster sites and landmarks must not be under-estimated. After a disaster, people want to re-establish the pre-disaster norm as soon as possible. The greater their sense of identity, and the less they have to replace or rebuild, the faster the overall recovery from disaster.

4. *The very presence of bulldozers inhibits reconstruction.* Mechanized clearance is dusty, noisy and frenzied. In areas where people have had little exposure to heavy, mechanized equipment, bulldozers are often terrifying. In some cases, bulldozing can be dangerous: when knocking down damaged buildings, the debris can spill over into adjoining public spaces. Reconstruction rarely begins until all bulldozing has ceased.



The mechanized clearance of rubble (seen here after the Guatemalan earthquake of 1976) can remove vital building materials which are capable of being recycled for new construction, such as the beam projecting from the front of the bulldozer. (Credit: UNDR0)



After the Corinth earthquake in Greece in March 1981, this man is salvaging roofing tiles from his damaged house.

(Credit: Kapereli Voiotias, Athens)

However, there are some instances where bulldozing is required. Following natural disasters in large, urbanized areas, damaged high-rise and other structures may need to be demolished for safety reasons. Finally, it is recognised that some clearance will be necessary to re-establish communications after a disaster. Employed as an automatically-implemented policy, however, rather than as a particular emergency measure, rapid mechanized clearance inevitably retards reconstruction.

THE ARMY

The army is often called upon to set up emergency tent camps for disaster victims. Because these camps are too rigid in layout, too uniform, too large, too dense, and often too far from original homes and work, they are the source of unforeseen problems:⁷ either they remain half-empty, or they breed environmental and social ills because of induced promiscuity. In the administration of emergency shelter programmes, military organizations seek uniformity and conformity. This concern for order is simply too much to expect from a civilian population stricken by disaster. The period immediately after a disaster is a time when people need to get together and develop a collective response. A military hierarchy of decision-making inhibits this organic social process.

The military nevertheless can play an important, positive role in the emergency phase. It has great potential for rescue and relief since it possesses certain unique advantages over all other agencies, such as the capacity for rapid action, pre-established emergency stock-piling facilities, and considerable logistical resources. The military's most effective roles in relief operations include:

- Opening up roads and re-establishing telecommunication links;
- Providing emergency water supplies and sanitation;
- Transporting and distributing emergency relief supplies and personnel;
- Assisting survivors in search and rescue operations;
- Demolishing structures which threaten to collapse;
- Stockpiling essential demolition equipment, building tools and vital building materials;
- Undertaking aerial surveys of damage.

THE ROLE OF LOCAL PROFESSIONALS

Local professionals have the potential to fulfil important technical assistance roles in the post-disaster phases. However, their involvement is often limited because of professional and social barriers between the liberal professions and the low-income groups who form the majority of those affected by disasters, and who live, mostly illegally, in unsafe buildings on hazardous land.

THE ROLE OF THE PRIVATE SECTOR

The private sector includes enterprises operating on widely differing scales, from the small artisan to the large corporation. Overall reconstruction policy determines who will prosper, and it is therefore important to recognise the encouragement that can be given to small or medium-scale enterprises. Governments have a key social role in the way they administer credit, grants or loans to the business sector. The evidence suggests that a major bottleneck in disaster recovery is the lack of "cash flow" to get goods moving. A constraint on the rapid delivery of key building materials has been the monopolistic practices of a few large stockists and producers of building materials.

THE ROLE OF EXPERTS

In many developing countries there is an acute shortage of local expertise on many aspects of shelter and housing provision following disaster. Expertise is needed for:

- Contingency planning (preparedness);
- Damage survey methods;
- Preparation of building codes for hazard-resistant construction;
- Appropriate modification techniques to rebuild low-income housing, and make it more hazard-resistant (this will include both traditional housing as well as some "modern" housing);
- Education of local architects, engineers, builders, carpenters, in hazard resistant construction.

THE ROLE OF EXTERNAL VOLUNTARY AND RELIEF AGENCIES

In addition to the primary, altruistic motivation of emergency relief, there are extraneous pressures on voluntary agencies which may be harmful to their purpose. These include:

⁷ An exception to this broad conclusion occurred after the 1963 earthquake in Skopje, Yugoslavia, when military engineers from many countries provided valuable assistance in the erection of prefabricated housing. However, the context was not, strictly speaking, that of a developing country.

The need to impress their contributors with a rapid and visible response;

The need to raise funds;

Competition with rival agencies;

The need to avoid offending the susceptibilities of the local administration;

In some instances, the limitation of their role to a specific "relief role", thus encouraging them to restrict their shelter perception to an artificially narrow frame of reference.

However, they have certain inherent advantages which are particularly apparent when they operate in close rapport with local counterpart agencies. These include:

The capacity to operate very rapidly;

A grass-roots link to the local social and political structures;

Flexibility of approach;

Prior experience of disaster management (often these groups will have greater experience than all the other assisting groups including, in some instances, the central government).

THE ROLE OF DONOR GOVERNMENTS

Similarly to the constraints on voluntary agencies, the altruistic motivation of emergency relief provided by donor governments is often tempered by the politics of bilateral aid. However, they have the capacity to fulfil important functions throughout all three post-disaster phases. They are particularly well placed to provide long-term capital and technical assistance for reconstruction, and to link such assistance to firmer disaster preparedness and prevention policies.

THE ROLE OF INTERNATIONAL AGENCIES (UNITED NATIONS SYSTEM)

The effectiveness of international agencies may be reduced by extraneous pressures, harmful to their central purpose, including:

The need to demonstrate their value to ensure their future growth and funding;

Competition among UN agencies where there are overlapping responsibilities;

Over-sensitivity to the tendencies and preferences of requesting governments.

However, their distinctive contribution lies in:

The ability to mobilize large-scale assistance from a multiplicity of sources;

The reduction of the need for bilateral assistance (where there may be strings attached to assistance);

A unique co-ordinating role that no other agency or government can undertake alone;

Access to international expertise of the highest calibre;

Political disinterestedness.

Quite apart from the correct allocation of roles, the evidence gathered in this study suggests that many failures in emergency shelter and housing reconstruction programmes stem from bad management. This criticism applies to both governments and assisting groups.

A survey of the background of relief and reconstruction programme managers and field directors over the last decade in relief operations (Nicaragua 1973, Honduras 1975, Guatemala 1976, and Andhra Pradesh 1978) shows that none of the key staff personnel had received prior disaster relief training. It also shows that none of the staff had a background in management, or had a formal education in programme administration. The backgrounds of field directors were in specialized fields such as agriculture, sociology, anthropology, economics, and general development studies. Also represented were members of the legal and medical professions, ministers of religion (missionaries), and persons drawn from the public relations field. Of the field directors of the major voluntary/relief organizations, only three reported that they had received training from their own organizations in programme management, and that this was limited to short discussions.

This is not to say that field directors and their staff are not capable of planning excellent programmes. Several projects were well thought-out in terms of philosophy and objectives. The failure was caused by a lack of expertise in several vital functions:

Budgeting, especially estimating real costs;

Properly sequencing activities;

Forecasting problems;

Programme analysis;

Personnel administration.

Few, if any, courses currently exist to train field-level staff in programme management. (There are several courses to train executive-level personnel in disaster management; however, most of this training is strictly for governmental personnel.) As pointed out elsewhere in this study, there is a lack of solid information upon which to base project plans. Without management skills, and without the information upon which to base decisions, relief programmes are doomed before they ever get started.

One of the most pressing needs in international disaster relief is for programmes to prepare and train disaster managers at all levels.

THE LACK OF INFORMATION

The present lack of training opportunities reflects the severe shortage of information on the effectiveness of past projects. In the field of emergency shelter and post-disaster housing, there are many descriptions of past projects, but there has been little analysis of the cause-and-effect relationships between the conduct of a programme and its results. In reviewing the information available from studies of disasters, we know where the problems occur, but we have not fully described the problems themselves, nor accurately described their causes:

1. How do relief and reconstruction programmes relate to development?
2. What are the different shelter responses required by different types of disasters?
3. How can technical assistance be best employed to improve emergency shelter management, and accelerate recovery and reconstruction?
4. What are the most effective means for controlling the prices of building materials?
5. How can experience and technical assistance be communicated to all levels of management and execution, and how can technology best be transferred?
6. What types of organization are best suited to respond to shelter/housing needs?
7. What is the true role of emergency shelter in the overall relief and reconstruction scenario?
8. What makes shelter programmes effective?

These gaps in knowledge stem ultimately from a general reluctance to question the fundamental nature of the relationship between donor and recipient. This question is discussed in detail in the concluding chapter.

Policy guidelines

Policies to avoid

1. The centralization at the national level of all authority and decision concerning shelter.
2. Permitting an anarchistic situation to develop, where various agencies perform their own tasks in an uncoordinated manner.
3. Allocating key roles to assisting groups who are unfamiliar with the local situation, or who lack any local counterpart group with whom they can effectively collaborate.
4. Any policy that encourages partiality of aid distribution.⁸

⁸ A traditional solution to the problem of the proliferation of agencies has been the simple allocation of geographical areas whereby one agency will take responsibility for one community, and so on. This policy has its attractions since it is relatively tidy and it recognizes pre-disaster patterns of working where certain agencies may have established close relationships with certain communities. However, it has many pitfalls, the most significant being partiality of aid distribution, since some agencies will have more resources than others. Given the close contact between adjoining communities, such a policy can cause acute local dissension, and all local goodwill can be rapidly turned into hostility towards a particular agency. Therefore, the role-allocating authority must be extremely sensitive to the question of the choice of different communities for aid projects. The overriding concern must be for fair distribution of resources.

Policies to adopt (See table 2)

The local administration should assume responsibility for the allocation of roles and subsequent direction of all assisting groups concerned with housing and shelter provision, whilst making full use of those groups' particular expertise. In the allocation of roles, the following considerations should be borne in mind:

1. Avoid mechanical clearance of rubble (bulldozing) where building materials can be salvaged.
2. The local administration should allocate all roles for shelter and housing assistance.
3. There are important roles for the military, but they do not necessarily include shelter provision.
4. Local professionals can be extremely useful but are often psychologically and socially removed from the shelter and housing needs of low-income families. Their attitudes and commitments need to be changed.
5. The local private sector, particularly small enterprises, can play a major role in building shelter at economic rates, but they must be protected from cartels and monopolistic practices.
6. Local experts should always be used in preference to foreign personnel. However, not all the expertise required can be found locally.
7. Voluntary agencies have a flexible, grass-roots capacity which can be a vital asset in providing assistance at local levels.
8. There is a noticeable lack of effective project management of shelter and housing programmes, with a consequent need for training at all levels.

NOTE

The majority of issues discussed in this chapter are examined in more detail in chapter V, section 5-3, on the accountability of donors to recipients of aid.

Key references

- DAVIS, Ian, "Disasters and Settlements: Towards an Understanding of the Key Issues", *Disasters and the Small Dwelling*, Pergamon, Oxford, 1981, pp. 11-23.
- TAYLOR, Alan J., *The INTERTECT/OXFAM Disaster Management Training Package*, INTERTECT, Dallas, Texas, USA, 1976.
- OXFAM, *Field Directors Handbook—Guidelines and Information for Assessing Projects*, OXFAM, Oxford, 1974, revised Feb. 1980.
- Note particularly:* Sections 30-39—Social Development; sections 40-41—Humanitarian Programmes; section 50—Disaster Policies and Procedures; section 51—Emergency Nutrition; section 52—Disaster Technology: Sanitation, Water and Shelter.

TABLE 2

Ideal roles for assisting groups relative to shelter provision

Activities	Roles of assisting groups										
	International agencies	External donor governments	External voluntary agencies	Experts (multi-disciplinary group)	Private Sector	Local professionals (architects, engineers, etc.)	Local Military	National government	Local administration	Local voluntary groups	Survivors
Phase 1 — Immediate relief period (impact to day 5)											
Search and rescue operations							●		●	●	●
Clearance of rubble (recycle materials)									●	●	●
Re-establish communications							●		●		
Co-ordinate external assistance	●							●	●		
Provide emergency shelter					●				●	●	●
Re-establish damaged infrastructure (water sewers, etc.)							●		●		
Assess unmet needs of survivors	●	●	●			●	●		●	●	●
Phase 2 — Rehabilitation period (day 5 to 3 months)											
Providing essential building materials		●	●		●		●		●	●	
Provide expertise for safe housing construction	●	●		●		●		●			
Release safe land for new housing								●	●		
Re-establish damaged infrastructure							●		●		
Rebuild damaged and destroyed homes					●				●	●	●
Assess damage to housing	●					●	●		●	●	
Co-ordinate external assistance	●							●	●		
Re-establish local economy								●	●		●
Provide cash inputs to survivors		●	●					●	●	●	
Clearance of rubble (recycle materials)									●	●	●
Phase 3 — Reconstruction period (3 months onward)											
Re-establish damaged infrastructure		●			●			●	●		
Formulate building codes for safe construction	●					●		●	●		
Provide expertise for safe housing construction	●	●	●			●					
Devise contingency plans for future earthquakes	●			●		●		●	●		
Develop stockpiles of essential building materials					●			●	●		
Rebuild damaged or destroyed homes					●				●		●
Devise any new plans for destroyed towns	●			●		●		●	●		