"DISASTERS AND THE SMALL DWELLING: THE STATE OF THE ART"

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Introduction

In discussions of disasters, emergency shelter and post-disaster housing, there is often a tendency to forget that disasters are more than events which cause death, injuries and destruction to property. In order to understand the problems that are involved, we must first recognize that disasters are a human problem and that our study of disasters and their impact on housing must be viewed in the context of the society that builds and occupies the housing units. Too often, housing is examined simply as an artifact -- a design or a structure -- rather than as an end-product of a very complicated process. It is difficult enough to try to understand the human processes within a culture with which we are familiar; attempts to understand the processes within societies of the Third World are made doubly difficult by the necessity of understanding the consequences and impact of a program on a society which is trying to make social and economic progress, or as we say, to develop.

It is this need to understand relief programs and the provision of housing assistance within a context of development that I wish to emphasize. As long as disasters are viewed solely as phenomena which cause temporary hardships, rather than as major factors affecting the ultimate outcome of the development of a society, we shall be committed to perpetuating the mistakes that have been made in the past and the impact of post-disaster housing and emergency shelter programs will continue to compile a dismal record.

Recurring Problems

From the point of view of intervenors, there are seven major problems that reoccur in each disaster, no matter what type -- natural or civil. These problems are well known, they have been described many times, and much has been written about the nature of each. I point them out here because, despite the wealth of information which is available, the failure to understand these

problems and to re-examine how they have been met in the past, is one of the major failures of relief organizations currently working in this field.

1. The first problem is the failure to comprehend the magnitude or the complexities involved in providing housing in a developing society. Agencies repeatedly attempt to simplify what is a complex process; and by doing so, they create innumerable problems, not only for themselves, but also for the society which they are trying to assist. It is a very naive approach to believe that an agency can go into a society and provide a structure which meets their definition of shelter or of a house, without participating in the process through which houses are normally provided. One need only look at recent examples in Andhra Pradesh where some agencies completely ignored the normal housing process and rushed to provide structures which met their needs, but had little relation to meeting the total needs of the victims. How often have we seen housing programs which completely excluded the victims? The typical program today not only excludes the victims from meaningful participation in decision-making, but also ignores the local building community. It either relies upon skills which are non-existent within the community or introduces new skills without ensuring that the capacity to use them is left within the affected community. Rarely do any of the local financial institutions -- formal or informal -- participate in the program.

The normal method by which a housing program is established is as follows: An area is requested or assigned by the government. The intervenor then estimates how many victims need housing, reviews the amount of money available, and divides the amount of funds available by the number of structures needed in order to determine the investment per structure. The agency then plans its program in such a way as to try to provide some form of structure to all the families within the designated area.

After the agency has determined the total number of units it will provide, it seeks a construction system which will enable it to meet that quota. One or more standard designs are adopted, teams of local personnel are hired and trained, and mass construction begins. When the number of required houses has been built, or when the funds run out, the program ends. The agency then measures its success by the number of units that were produced, whether they were produced within a certain time limit, whether the project came in above or under budget, and what percent of the population within the assigned area has been re-housed.

In this approach, the house is seen as the end-product or result. Success is measured in terms of the donor and not of the victim. Rarely has anything been left in the community other than an artifact. Few, if any, contributions have been made to the building process. No skills have been left; often the local building community has been completely ignored. The materials used may not be replaceable. The structures which have been built cannot be repaired or maintained. The normal processes by which housing is normally obtained within a society may have been damaged to such a point that they may no longer be considered appropriate coping mechanisms with which to deal with a future disaster.

Any contribution of emergency shelter or post-disaster housing must be based on a clear understanding of the pre-disaster normal building process. Contributions must be compatible with and complementary to local resources and local technical capacity. It is a matter of vital importance that any aid provided be provided in such a form that it will make a direct contribution to rapid recovery and an improved post-disaster standard of housing.

2. The second problem is that of working from the part to the whole. By this, I refer to the attempts by many people to examine one disaster and try to draw conclusions which can be used in responding to another disaster in another location. While there are, of course, many factors which repeat in different disasters, more often than not, lessons cannot be standardized and transferred from one locale to another. To gain an understanding of the lessons, it is necessary to examine a variety of situations and draw out the common lessons and issues.

3. The third problem is the lack of adequate understanding of the differences in disaster types and the responses required. Most disasters are currently categorized according to causal phenomena, i.e. earthquakes, cyclones, etc. However, this method of categorization does not fully describe the products of the disaster, nor the effects on a population. A better method is to divide disasters into two main categories: cataclysmic or one-off disasters, and long-term or continuing disasters. In the cataclysmic disaster, usually one large-scale event occurs which does most of the damage and destruction. Following this single event, there may be a tremendous amount of suffering

and chaos, but things generally begin to get better as time passes. In a continuing disaster, the situation remains constant or may even deteriorate as time passes. Cataclysmic disasters include earthquakes, volcanic eruptions, cyclones and floods. Continuing disasters include prolonged civil strife, crop failures and droughts. The damaged area in a cataclysmic disaster is usually rather small, while the area affected in a continuing disaster may be extremely large.

In terms of housing, cataclysmic disasters are normally more disruptive than destructive to the normal building process. For example, they may disrupt the transportation of materials and the normal market for building materials. However, normal markets can be quickly re-established, and various supporting and coping mechanisms are usually available which enable a community to begin the process of reconstruction. On the other hand, continuing disasters not only disrupt transportation and distribution networks, but often cause dislocation of populations, thereby removing people from the normal markets and severely inhibiting their ability to reconstruct. Furthermore, the longer a continuing disaster lasts, the greater the potential for permanent damage to the local building process.

How can this categorization of disasters help the program planner? In a cataclysmic disaster, the building process is likely to be unaffected in the long-term. Therefore, housing assistance must either be channeled through, or be compatible with, the normal housing process. In a continuing disaster, however, only fragments of the normal housing process may be available and new coping mechanisms must be instituted in order to achieve the program objectives.

4. Problem four is the failure to understand disasters in the greater context of development. Disasters have consistently been regarded as separate and distinct events, and the cause-and-effect relationships of disasters to the development of a country have been overlooked. Disasters often precipitate major changes in both the economic and political life of a country. In the field of housing, disasters constitute one of the major instances when a widespread demand for housing is prevalent (the other being rapid urbanization) and when substantial changes and improvements can be made in the housing stock.

However, most agencies continue to regard disasters as separate events. Many organizations, including some of the most progressive development groups, lose their perspective after a disaster and, blinded by the urgent immediate needs, concentrate their energies on the rapid delivery of relief items. The approaches normally used in a development program -- such as extensive citizen participation, support of existing social coping mechanisms and social systems, development of local initiatives, etc. -- are set aside on the justification that the disaster requires an immediate response and the development approach is too slow. Relief and reconstruction programs, however, cannot be regarded or conducted as separate or distinct operations. They must be conducted in the same manner as normal development programs. Organizations which fail to recognize this can set back or even wipe out years of progress toward social and economic development.

Experience has shown that few outside intervenors are conversant with the development issues in the countries to which they provide assistance during emergencies, in spite of the fact that these issues rapidly come to dominate and control events in the post-disaster period.

5. The fifth major problem is the continuing lack of cooperation between organizations involved in relief at all levels. Sharing does occur in the area of material and financial resources, usually at the international level. However, at the disaster scene, cooperation is rarely put into effect. Most importantly, there is little understanding of the need for uniform disaster policies, especially in housing.

The usual result of this lack of cooperation is the uneven distribution of materials and resources made available to the victims. Because of the different levels of aid, severe problems are presented to organizations such as local government agencies who have long-term responsibilities in the area. Inequitable distribution of aid can create tensions between local groups, and between a population and its government. For instance, if the distribution of housing materials varies in the level of adequacy, quality and value, then local administrators and organizations may be subject to charges of favoritism and prejudice in distribution.

Collaboration between governmental and non-governmental organizations must become the norm in order to alleviate these inequities. Uniform policies should be developed through collaboration of private and governmental agencies

before they are made compulsory by the governments of the host countries. By understanding and working out standardized policies before a disaster, relief items can be distributed in an equitable fashion. Lack of collaboration and continual ignoring of the need for equitable distribution will lead to severe limitations placed on the intervening agencies, and the overall result will be to deny a wealth of resources to disaster victims.

6. A lack of sophistication in dealing with housing in a post-disaster environment is the sixth problem. Because housing tends to be regarded as a product rather than as a process, organizations continually ignore the issues of financing, land tenure and land use, and the question of capital flow within a disaster-affected society. Organizations are quick to develop ways to provide a housing unit, but very slow to estimate its impact on the community and on the building process.

Recent strides in this area have been made, however. OXFAM, World Neighbors, U.S.A.I.D., and the Save the Children Alliance all worked vigorously in Guatemala to develop ways in which money spent by victims for the purchase of building materials could be placed back into the community in the form of work programs. Other projects, such as those currently being developed by the Ministry of Housing in Peru, are seeking new ways of providing incentives to encourage people to make substantial changes in the design of their structures. Other organizations are working to develop ways of utilizing local coping mechanisms as vehicles for distribution of relief materials, as well as means for developing new financing methods. Finally, and perhaps most importantly, various governmental organizations are beginning to explore new ways in which policies, not programs, can be used to effect change in housing, during both the pre-disaster and the post-disaster periods.

Yet much is needed, especially at the level of the private voluntary agencies, to further expand our sophistication in dealing with these matters. The development of model programs, and the dissemination of information about the more sophisticated projects, will help to improve the performance of these organizations in the future.

7. The final problem is the inadequacy of the current criteria used for program evaluation. Organizations tend to examine programs in terms of their own needs rather than the needs of the victims. Evaluations based on this

concept can serve only to provide information which is misleading and will not get at the root of the problems. New criteria, as well as new methods for examining programs, must be established and adopted throughout the relief system, especially by the donor agencies. In short, a "bottom-up" approach is needed for a critical examination of the impact of programs on a particular society. The ultimate criterion cannot be how efficiently a program was administered, but rather how effective a contribution it made, not only in alleviating short-term needs but also in meeting long-term needs.

Gaps in our Knowledge

Up to this point, we have been looking at problems common to all relief operations and to housing programs in general, about which much is already known and written. There are numerous areas, however, in which solid information is lacking and additional research needs to be undertaken, in order to gain a more thorough understanding of the processes and issues involved. Of these, there are three major areas in which substantial gaps of knowledge exist.

1. Understanding the system: We are hampered by the lack of detailed studies on the nature and causes of recurring problem points at each level of the relief system. In short, intervenors know where the problems occur, but they do not know why. Few attempts have been made to collaborate in identifying, analyzing and correcting them. Studies of disasters have not treated the process as a system, with funds and actions beginning in one area, resulting in actions and products in another. Until the system is viewed as a whole, significant changes will not be possible.

It can be said that the majority of the gaps in our understanding of disasters can be related to linkages. Linkages can be defined in two ways: first, the cause-and-effect relationships between actions and results; and second, the relationships between components of a particular system. In the second definition, there are two types of linkages: vertical, such as the linkages within organizations between different branches or groups of that organization; and horizontal, such as the relationship one organization bears to another.

In the study of emergency shelter and post-disaster housing, there are many descriptions of the activities carried out in the running of a particular

project or program. However, there is little existing information on the cause-and-effect relationships which link the program with the results; and there are few analyses of why certain programs have turned out as they have. To date, the primary approach has been to attempt to artificially improve the linkages, rather than to examine the linkage itself and its role, and to evaluate whether or not that linkage should even exist. For example, many relief organizations attempt to improve on the delivery of materiel by developing more efficient means of moving materials from a donor country to the disaster area -- in other words, from point "A" to point "B" -- rather than examining the problems which relate to the distribution of the materials once they have arrived in the disaster area -- i.e. point "B" to point "C...Z".

In terms of improving the performance of intervenors, evidence suggests that the best approach is to reduce the vertical linkages that exist and the volume of material, decisions, etc., that move vertically; and to increase the horizontal linkages -- in other words, to transfer the bulk of the decision-making to the field and increase reliance upon services and materials that are already on-site and locally available. However, extensive verification of these concepts is still needed, and much information is lacking about not only the nature of the system but also the linkages and cause-and-effect relationships.

2. Real opportunities: It is a common saying to casually declare that a disaster provides an opportunity to create meaningful change, not only in housing but also in the social and economic standard of a community. This is often one of the prime reasons, in fact, why organizations attempt to deliver so-called "modern" housing systems and materials in the post-disaster period. However, recent evidence suggests that the real opportunities for change are extremely limited. One of the major gaps in our knowledge is the inadequate understanding of just exactly what the real opportunities are and how we can best utilize these opportunities to create a change which will be long-lasting and significant within the community.

3. Understanding the impact of programs: Of all the gaps in our knowledge, this is the most important and the one consistently overlooked. Only in the past five years have significant studies been conducted which show the impact of post-disaster programs on a society. The total number of thorough studies

which have been conducted on the impact of housing programs can be counted on two hands. Those studies which have been conducted indicate that housing aid often inhibits the recovery process and creates dependency relationships, and that the internal coping mechanisms of a society can be seriously affected by an ill-conceived relief program. In order to be more effective as intervenors, we must have more information on the impact of our actions. New criteria must be developed for evaluating programs, and new methods must be developed for conducting program evaluations, including not only program staff but also recipients. The weight of these evaluations must be from the viewpoint of the victim or recipient.

At this point, I would like to pause for a moment and make a comment about why we have these gaps. At every level of the relief system, there is a lack of useful data on housing and housing programs. Following disasters, intervenors prepare detailed reports listing the assistance they have provided, but rarely do they undergo a true process of analyzing their actions and impact. Few reports state the initial objectives of a program and how the program lived up to these objectives. There is a lack of hard data on program philosophy -- why a program was set up in a particular manner, and what the associated objectives were. Every organization can tell you how many houses they built; but few reports define the program in terms of its social objectives or the philosophy that led to the selection of a particular approach -- other than a few catch phrases that are currently in the relief/development vernacular, such as "self-help", "appropriate technology", etc. This lack of detailed information about programs means that, each time a disaster occurs, someone has to begin from scratch and relearn all the lessons that have been learned before. Until organizations and agencies begin to take a realistic attitude toward program documentation and evaluation, they will be doomed to repeat the mistakes of the past.

Priorities for Research

Now that we have looked at some of the problems and gaps in our knowledge, let us examine some of the opportunities that exist for researchers and for those of us currently active in the field to make a meaningful contribution to the state of the art in the next few years. I have divided the research priorities into two categories: software needs and hardware needs. Under the

category of software needs, there are four areas which must receive priority attention.

The first of these is the documentation of past experience. I cannot emphasize enough the need to go back and look at the programs that we have already conducted. Within the past ten years, the amount of aid and relief has quadrupled. The number of people involved and the number of ideas, programs and approaches that have been tried is phenomenal. Before this information is lost, we must go back and review the long-term impact of the programs; try to document the actions, policies and approaches taken; and develop a solid body of evidence that will guide us in our future actions. This is a role for everyone at all levels of the system, in both government and voluntary agencies, in universities, and in research firms.

The second major software need is for a thorough examination of policy options versus program options. During the past year, we at INTERTECT have become more and more aware of opportunities that are being missed simply because organizations attempt to respond to every disaster with a program approach. However, programs have very definite limitations. Funding is for a fixed period; an organizational framework must be established; various administrative machinery must be activated in order to carry out the program. Normally, when funds end, the program ends. But are there not areas where policy decisions and commitments could be made by governments or agencies which would achieve the same goal?

For instance, let's take the situation in Guatemala in 1976. All the major organizations involved in relief there began programs to provide metal roofing material, locally known as lamina, to the disaster victims. U.S.A.I.D., OXFAM and World Neighbors, the Save the Children Alliance, and almost half a dozen others developed programs whereby people could purchase a limited amount of lamina at low cost. But was there another option? What would have happened if the government, or other organizations, had made a policy decision to underwrite low interest loans through existing loan institutions for everyone in the disaster-affected area, and to develop a government-supported surplus of building materials? Could not the widespread distribution of lamina have been handled without having to develop elaborate programs on the part of the agencies? It has been shown that the vast majority of the victims did have money to purchase building materials. If a surplus of materials had been created, the prices would have dropped and the people would have been able to purchase the

amount of lamina they needed without going through a subsidy program set up by an agency.

At this point, of course, it is all speculation. But working scenarios need to be developed for similar situations. Policy options are a field which needs to be explored in depth before we go much farther.

The third area to which priority software research should be devoted is in a more thorough exploration of the various approaches and strategies currently used in the provision of housing after disasters. Some work in this area has already begun, and a cataloging of the strategies and approaches available was recently incorporated into the UNDRO study on emergency shelter and post-disaster housing. Yet much more work needs to be done. While the available strategies are limited, the approaches to putting these into effect in a positive manner have yet to be exhausted and innovative ideas are sorely needed, especially those which incorporate an expanded degree of sophistication in dealing not only with housing but with the related problems of development. We need more information on strategies and approaches for disaster mitigation and disaster preparedness. Many of those now advocated (such as restrictive land-use zoning) are simply not applicable to the rapidly urbanizing areas of the developing countries. A number of techniques used routinely in other professions (such as gaming and simulation) offer potential for developing scenarios to be used in disaster mitigation.

The final area where increased software research is needed is in the field of technology transfer. The ability to effect change in housing is dependent upon three factors: the availability and continued availability of any materials required; the ability to teach and transfer the technology on a level that will ensure comprehension by the users; and the ability to keep the costs of construction and maintenance within the reach of the occupants. Theoretically, the first and third are factors which can be controlled. It is the second -- the transfer of technology -- where we as intervenors fall down. There is a substantial body of information available about how to transfer technology in the sectors of industry and agriculture. New ideas have also been formulated in the so-called field of "appropriate technology". But housing is just as specialized as other areas, and more information is needed about not only how to transfer the information, but also about what information to transfer and to whom.

Recently, several agencies have been trying to develop housing education programs following disasters and have concentrated on trying to disseminate the information to the public at large. In a review of one of these programs, we found that in the disaster-affected society, all housing construction is initiated and supervised by a carpenter. If the emphasis of the program had been redirected from the public at large to concentration on the improvement of the carpenters' skills, and to the provision of incentives and inducements to both carpenters and the public to create a demand for improvements in housing, far greater success might have been achieved.

Let us now talk about another area of research needs, that is, the field of hardware. In general, I do not advocate the development of new housing systems for developing countries. If our vast accumulated experience has shown anything, it is that we must take what the people already have and begin by making slight improvements in the performance of the existing structures. Let me emphasize this fact: new housing types are not needed. Every relief agency has a file cabinet full of bright ideas submitted by graduate students, industrial designers and architects, which offer the ultimate solution to the world's housing problems. Thousands of designs and concepts have been drawn, some have been developed, and even a few hundred have made it to the field. The ideas range from OXFAM's aluminum frame to the Bayer polyurethane igloo, and down to the emergency shelter unit developed for Bangladesh by INTERTECT in conjunction with Carnegie-Mellon University. The point is that one cannot develop a structure in Oxford or in Dallas for someone who lives in Ouagadougou. The processes at play and the constraints on the designer vary not only from country to country, but even from village to village.

What then is the role of the designer and industrial technologist? The answer is that there is a role to be played in the development of improved components and component systems. New low-cost roofing materials are needed, for instance, especially those which can be manufactured within the developing countries. The most popular type of building material today is corrugated iron sheeting. It travels well; it is affordable for most people; it has durability and even prestige. But there are many problems associated with this material. It has very poor insulating capacities; and when used in housing where open cooking fires are used without suitable smoke evacuation, it can present a real health hazard.

Another area of component research and development is to find better ways to use indigenous materials and to extend the life of the indigenous materials now being used. For example, what country does not have severe problems with termites, white ants or moisture-induced wood rot? The techniques for preserving wood today are either too expensive or too complicated to be used in remote villages (or a combination of both).

Another type of hardware, which we will all need more and more, is innovative training aids. To date, only minimal work has been done and few alternatives to printed materials (which themselves have extreme limitations) have been developed. Materials are needed at two levels: basic, solid technical information for program planners who are not housing technicians, and a variety of multi-media devices which can be used to teach indigenous populations new housing methods. The major references for agencies today are materials such as those produced by the U.S. National Bureau of Standards and the U.K. Building Research Establishment at Watford. Pioneering work has been done in housing education at the village level by OXFAM and World Neighbors in Guatemala, by the Ministry of Housing in Turkey, and by the Office of Research and Standards in the Ministry of Housing in Peru. Institutions in Mexico and India have also begun to make contributions to the field; yet more work is vitally needed, and new media and media combinations must be developed.

Priorities for Action

We come now to the final category to be discussed, priorities for action. I have saved this for last, but I want to put most of my emphasis on these various recommendations. Up to this point, we have examined the problems we face and the information that is still required; and in many ways, the discussion to this point has been primarily a listing of shortcomings. However, it is my fervent belief that changes in the relief system and improvements in the performance of agencies can, and are being made. There are immediate steps which can be taken by all the intervenors -- both individually and together -- to make changes which will improve the situation all around. Until some of these changes are instituted, no meaningful progress will be made.

The first priority for action is to move the majority of activity in this field to the developing countries. This is not to say that there is no role for organizations in Europe and the United States; but we must realize

that this role is severely limited and that if it is results we are seeking, we must transfer not only the funds, but also the decisions about how the money will be spent, to the field level. New dialogues must be developed with those in the developing countries concerning the research and development of new ideas. The very fact that this conference is held in Oxford rather than in one of the disaster-prone countries shows where the resources and interest in the subject currently lie. Each of us must make a conscious effort to redirect the emphasis, for only by working in the developing countries can meaningful new approaches be developed.

The second priority for action is to redirect our thinking in such a way as to ensure that all program activities meet the needs of the victims, not those of the donors. The sad fact is that the majority of programs which are now carried out, while designed to help the victim, more accurately reflect the needs of the donors than the recipients. One only needs to examine the criteria normally used in developing emergency shelters to verify this statement. Is the shelter unit which is compact, easily transportable, quickly erected, and is produced in an industrialized nation truly meeting the needs of the victim? Or does it not rather represent criteria developed by the relief agency? In every stage of a post-disaster response, we must ask the question, "Whose needs does this activity meet?". If the answer is not the needs of the victim or of the society which has been affected by the disaster, then something is greatly lacking.

What we are talking about is <u>accountability</u>, a concept which is long overdue in international disaster relief. Few intervenors hold themselves accountable to the victims, and no effective mechanisms currently exist for making them so. The more an organization is strictly relief-oriented, the less accountable it becomes. Unless mechanisms are developed to hold intervenors accountable to the victims, post-disaster programs will continue to have only limited, and mostly negative, impact. This is not to say that agencies do not have dual accountability. We must recognize that they are, in fact, accountable to their accountants and to the donor public. But the ultimate accountability and the final test for evaluating a program must be, "Does it meet the needs of the victims?".

The third priority for action is to change the management structure of relief agencies to allow participatory management and decision-making. The vast majority of donor agencies have adopted industrial or military models of organization. These are designed to provide control from the upper levels

of the organization down through the lower levels, and to facilitate the delivery of information from the top to the bottom. By their very nature, they are not conducive to decision-making at lower, or local, levels; and they prohibit or severely inhibit the upward flow of information concerning needs and problems. In order to become more responsive to the needs of the victims, relief agencies must explore new organizational schemes which facilitate participatory management and place a greater share of decision-making authority in the field.

The fourth priority for immediate action is the development of standardized policies to help frame decision-making in the post-disaster period. No agency can adequately anticipate all the immediate needs in a disaster-affected area immediately after, or even several weeks after, a disaster has occurred. In disaster after disaster, program administrators are forced to cope with little or no guide or framework to help shape their actions. Agencies have adopted standard operating procedures and various organizations have compiled relief manuals -- all to no effect in improving performance. What is needed in the field, by every program director, is a framework for making decisions. The best time to provide this, of course, is before a disaster strikes. Key issues reappear time and time again in the provision of shelter. Once these issues have been identified, policies can be developed to frame program actions once a disaster strikes. For example, one issue which consistently recurs is whether or not an agency should sell houses, subsidize them, or give them away. This issue can be explored by the staff with participation of the leaders of the community in which the agency is operating. From this discussion, a policy decision can be developed and incorporated into a disaster plan. Once a policy has been set, details can easily be left to the program administrator to work out, depending on the situation and the availability of resources.

The fifth priority of action is the establishment of an information dissemination system. Several organizations now serve informally as centers for technical and program information for those in the field. At best, however, it is an ad hoc system with only limited capabilities and potentials. What is needed is either a single information system or a network which ties together the existing components so that the information is available to everyone quickly upon request. Most importantly, what is needed is an active system, i.e. one which provides useful information when it is requested, rather than a passive one, i.e. one which only leads you to other resources. (There is nothing

worse than to be in the field, requesting information, and to receive a computerized bibliography!) In order for such a system to work, many of the relief agencies and those who have had experience in housing are going to have to open up their files to share the lessons learned and past mistakes with others.

The final priority for action is in many ways the most important, but it is also the most difficult to achieve. The emphasis must be shifted from disaster response to disaster mitigation and prevention. Most disasters are the results of natural phenomena which, in themselves, would not constitute disasters, were human settlements and structures properly planned and designed so that the phenomena would not have an effect on them. The magnitude of the disaster reflects the country's stage of development, or rather underdevelopment. In other words, disasters are disasters because the countries are underdeveloped. For those organizations which are currently involved in development programs in these countries, greater emphasis must be placed on trying to prevent disasters from occurring. Lands which are subject to flooding should not be opened for new settlements. Housing should not be permitted on steep slopes that are subject to sliding in heavy rains or in earthquakes. And areas which lie close to the sea in cyclone-prone areas must have an adequate system of dikes and levees built to protect them from cyclone-induced flooding and tidal waves. In areas where possibilities of widespread flooding exist, all-weather roads must be built and raised above the flood level to provide escape and evacuation routes for the population.

In short, it is time to take the naturalness out of disaster.