STRATEGIES AND APPROACHES WHICH CAN BE USED BY VOLUNTARY AGENCIES TO PROVIDE POST DISASTER SHELTER AND HOUSING

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I. REVIEW OF STRATEGIES EMPLOYED BY INTERVENORS

Following natural disasters, wherein a large number of the housing units have been destroyed or substantially damaged, relief agencies and other intervenors have usually chosen one or more of the following strategies to provide shelter and housing for the victims.

A. Emergency Shelter.

Many agencies,especially those who consider themselves only relief agencies, adopt the strategy of providing an emergency shelter unit to provide housing to the victims until such time as they can rebuild normal housing. In cases where there is an expected environmental risk to the victims due to the climate or seasonal conditions, emergency shelter units often receive a fairly high priority on the part of the intervenors in purchasing and shipping these units. At this point, the emergency shelter is basically a humanitarian consideration; the long-term impact of the shelter units are not considered, and questions of cost effectiveness normally do not come into play.

The record of the performance of emergency shelters and the role they play during the actual emergency period have recently been studied. The evidence provided in a study conducted by the United Nations Disaster Relief Office on the performance of donor-provided emergency shelters shows :

1. They have little positive effect on alleviating conditions in the disaster area. The times when emergency shelters can be employed after a natural disaster with any effectiveness appear to be extremely limited.
2. The majority of foreign intervenors have concentrated on designing emergency shelter units which can be quickly erected and can be flown from the donor country to the disaster area in a short period of time and in large volume. The problem, however, does not lie in moving the units to the disaster area nor in getting them quickly erected, the main problem is distribution of the units within the disaster area.
3. The evidence indicates very few of the emergency shelter units serve the purpose for which they were intended, in other words, life support or protection from the elements. The uses of the shelter units by the victims have normally been a secondary use, such as storage of goods household articles, or animals.
4. The vast majority of shelter following a disaster has been provided by the refugees themselves. Even in cases where the emergency shelter units have been erected, most have arrived and have been erected long after the emergency period.
5. In the few cases where the shelter units have arrived during the actual emergency period, they have usually been used in refugee camps. The evidence indicates that the creation of refugee camps following natural disasters has a negative impact and creates long-term problems. The use of emergency shelter units from outside the community forces relief officials to adopt hastily conceived plans for distributing and erecting these units. If they arrive immediately following the disaster, shelter units will receive a low priority (as compared to medical and sanitation needs), and, therefore, a shelter program will not receive the full attention that it needs. This encourages wastefulness and poorly planned distribution programs.

There are times, of course, when emergency shelter units are needed, but the evidence is overwhelmingly in support of its provision by the local government. If agencies wish to conduct emergency shelter programs, the time to begin conducting them is before

the disaster occurs. In other words, areas in which a high risk exists and areas in which the structures are vulnerable to disaster should be identified, and emergency shelter units appropriate to the climate and environment can be placed in the proximity, and distribution plans worked out in advance. Several countries, notably Turkey, have already undertaken steps along these lines.

B. Temporary Housing.

The temporary housing strategy is one normally undertaken only by governments because the cost of providing temporay housing is so immense. The difference between temporary housing and emergency shelter is that the unit provided is expected to be a house which will last for a period of several months to several years and is intended to be erected on the site of a victim's previous house. The philosophy behind a temporary housings strategy is that a low-cost, temporary unit can be provided at little or no cost to the disaster victim, and he will be able to live in it long enough to obtain the capital necessary to rebuild a normal permanent house. Temporary housing programs are normally used when damage covers very large areas and governments feel that it will take years to rebuild normal housing due to a shortage of capital and or materials.

The main problem of the temporary housing strategy is the cost of the 'temporary' units which are provided is often more than a permanent structure, especially when the disaster victims normally build their own houses from indigenous meterials. In Guatemala, the government purchased large numbers of small, prefabricated structures at a cost of between $300 and $600 a piece. They, in turn, offered these to the public through the co-ops at half price ($150-200). It was expected that the people would purchase the houses and live in them through the rainy season, and, six to nine months later, would rebuild permanent structures. The problem was, however, that a normal house only costs between $50 and $150 and provides upwards of three times the space of the temporary house. The people refused to buy the houses because they were too costly, and the government program of very long-term, low-interest payments still did not interest sufficient numbers of people in buying the units.

In those cases wherein temporary units are provided at a cost which is affordable or attractive to the disaster victims, the temporary houses may receive a greater acceptability with the villagers. However, a review of those instances where such units have been provided show that the houses are rarely used only on a temporary basis, that, in fact, they become long-term structures. Units provided in Peru following the earthquake in 1971, for example, are still in use. Rather than encouraging rapid reconstruction, the units usually slow the reconstruction process.

C. Accelerating Reconstruction of Permanent Housing.

Following several recent disasters, a number of agencies have developed a new strategy. Instead of attempting to provide emergency shelter or temporary housing, they have concentrated their resources on trying to encourage rapid reconstruction of normal housing. This approach-which only works following a "single event" disaster such as a flood, earthquake, cyclone or the cessation of hostilities following a war - assumes that people will look after their own emergency shelter or temporary housing needs and allows the agencies to put the emphasis on restoration of the normal housing process as soon as possible.

In this approach, houses may be rebuilt to the normal standard following a disaster in which the houses themselves did not fail, such as in a flood or in a war. Reconstruction to an improved standard would occur following a

disaster in which the houses failed as a result of inherent weaknesses of the structures, for example, following a cyclone.

The rapid reconstruction approach requires that the people have access to the normal housing process and markets. They must be able to obtain the materials they need for reconstruction and the services which are normally available within the community. As the majarity of reconstruction activities will be carried out in self–help housing programs, reconstruction to an improved standard must concentrate on introducing the techniques of improved construction at a technological level consistent with the community and at a price which they can afford.

The advantage of using this approach are as follows :

1. It enables limited resources to be concentrated where they will have a permanent effect, and is thereby extremely cost–effective.
2. It reduces the time during which people are without full, formal houses, and thereby facilitates the rapid return to normalcy.
3. As this strategy requires the use of a self–help housing approach, it keeps the houses at a price affordable by the local people and allows the decision–making to be kept at an individual level.
4. Because it requires the use of a self-help housing approach, costs to the individual family may be reduced.
5. This strategy uses and builds upon the existing housing process and the skills which exist in the community.

Generally, there are no major disadvantages to using this strategy, but it does require a willingness on the part of the government to assist by reducing the natural obstacles in the normal housing process and a long–term commitment on the part of the intervenor. Assistance can be in the form of price controls, low interest loans, etc. It also may require the local government to address some issues which it does not want to address, such as land reform. The approach should only be carried out where people are not living in vulnerable locations.

Of all the strategies available for reconstruction after a single–event disaster, this appears to be the best.

D. The ABC Strategy

In the past, some agencies have undertaken an A, B, C, strategy, i. e. they provide emergency shelter, temporary housing, then permanent housing. Some agencies, have gone the shorter but still costly route of A,C or B, C. These are obviously wasteful unless the materials and skills contributed at the first stage contribute significantly to the final "C" stage.

II. REVIEW OF APPROACHES TO EMERGENCY SHELTER AND POST-DISASTER HOUSING

Once an agency has adopted a particular strategy, it then selects a particular approach to carrying out that strategy. In terms of the structures that are eventually provided to disaster victims, one or more of the following approches is usually carried out.

A. Tents

Of all emergency shelter types, tents are the least damaging to interject on a disaster situation, but contribute the least to reconstruction and permanent development. The provision of tents has not been found to be completely disruptive, whether provided by local institutions or outside intervenors. Tents, however, rarely serve the needs of

the refugee or disaster victim, and, in many cases are not appropriate to the climate to which they have been sent.

Among the major problems of tents are:

1. They fail to fulfill many shelter functions. They are especially poor for storage of salvaged goods and belongings.
2. They are too small and cannot be expanded.
3. They may be more expensive than a new house made of local materials.

Tents are often viewed by relief officials as being superior to more permanent units because they will deteriorate and, thus, not become instant slum houses. There are three things wrong with this argument. First, from the standpoint of the victims, the gradual disintegration is a continual source of misery. Second, the argument points out the lack of knowledge of the factors that create slums and slum housing. Slums are rarely created by the housing units themselves; they may be a contributing factor to the poor appearance of a neighbourhood, but rarely are they the cause. Furthermore, disasters normally affect and deplete the housing supply in slums more than higher income neighbourhoods within an urban area. The provision of an emergency shelter unit into this environment will hardly be a contributing factor to creating something which had already existed before the disaster. Third, the argument points to the fact that agencies have not adequately reviewed their past actions in the shelter and housing field. The evidence indicates that most agencies that have provided tents have also provided housing assistance. In almost every case, the assistance is provided at the same location that the emergency shelter units were provided.

The major negative factor, however, relating to tents is the fact that they are not a contributor to long-term stability. Their distribution requires time and effort and commands resources which are already scarce following a disaster. It is a high price to pay for a commodity that does not assist permanent reconstruction.

B. Imported Designs and Units.

In the past ten years, there have been attempts to develop a single emergency shelter unit which would meet the temporary shelter and housing needs of victims in all areas of the developing countries. Members of the design profession, voluntary agencies, industry, and many universities have been active in this research. Hundreds of designs have been offered, many have gone into limited production, and a few have actually been shipped to disaster areas for use. The majority of these units have been designed to take advantage of simplified construction processes, for example, prefabrication, or to make use of new materials developed in the industrialized nations.

A survey of the success of these units has indicated that their use as emergency shelter units or as temporary housing has been extremely limited, and their performance and acceptability has been very poor. In examining the design criteria by the user agencies and governments which commission these designs, it is clear that the designer is responding to criteria developed by the relief agencies and intervenors, with little or no input by the victims themselves. While the agency may wish to have a low-cost unit that can be easily airlifted and rapidly installed, the refugee himself may wish to have a unit which is climatically suitable, easy to maintain, and provides storage for such things as his animals. Even in the cases where the housing unit itself may be culturally acceptable, the provision of hundreds of identical units may make it undesirable.

Another major problem is that often the agencies concentrate so much on developing a

perfect housing unit that the obvious need for sites and services programs to accompany the housing units are neglected. A review of the major housing programs offered after disasters in the last ten years in which the houses go mainly unoccupied indicates that the housing units were set up without any consideration of the siting nor the services to accompany the housing units.

There are, of course, instances where industrialized - style housing has been both appropriate and quite popular. In fact, there seems to be a growing trend for low-income people in the developing countries to demand such housing, especially low-income persons dwelling within large metropolitan areas. This demand, as well as the rising expectations of the urban poor, must be taken into account when planning temporary housing or emergency shelter programs. In recent relief operations, a number of these units were introduced in limited quantities, but were quickly discontinued due to the lack of funds. Their presence in the community, however, increased the expectation of those who did not receive the units, and when other solutions to the housing problems were offered, which used indigenous materials, there was great resentment on the part of those not receiving the "better" units and much animosity toward the government arose.

C. Designs Incorporating Indigenous Materials

In recent years, there has been much interest in the development of designs for emergency shelter units which incorporate indigenous materials. In the last several years, a number of groups have attempted to design and build shelters incorporating bamboo,wood, palm, reeds, adobe and other materials which are typically used in the construction of houses in the Third World. The majority of the effort has centered on developing designs which incorporate these materials and to make better use of the materials structurally, thereby improving their performance in adverse climatic conditions.

While there is little doubt that the structural performance of the units is greatly improved over traditional units incorporating the same materials, the majority of these programs have still been acceptable to the local people or to the agencies which have funded the projects. There are two major problems. The first is that to incorporate structural improvements utilising these materials often increases the amount of materials that are required, thus making the unit more costly (even though the units may be less costly than units that use industrialized materials). The second factor is that the units often have different shapes and forms than the structures which are found locally or which the victims aspire to. Again, these problems represent a failure of the designer in adequately defining the problem from the view point of the disaster victim. Experience has shown that to utilize this approach, the design process must include the disaster victims, the relief agencies, and the designer.

There are two additional problems which limit the agencies from utilizing this approach. First, very few relief agencies have qualified housing specialist which are familiar with the capabilities, potentialities and problems of using indigenous materials. For example, if an agency decides to utilize bamboo, it must not only know how best to use the bamboo structurally but must know such things as the proper time to cut the bamboo, how to recognise whether or not it has been cured properly, how to treat the bamboo for different climatic conditions and what materials to use with the bamboo so that damaging insects are not attracted to the structure. The use of indigenous materials is a sophisticated process and, because the agencies themselves are not familiar with the process, many program planners will avoid using the materials.

A second reason why many agencies have recently decided to avoid the use indigenous materials is that they are afraid of depleting the raw materials within the country. With the growing concern for the environment and the environmental impact of large scale depletion of raw material resources, agencies have become concerned that without adequate information on the ecological impact of using these materials, they may cause long-term harm in order to obtain a short-term benefit. It is thus mandatory that agencies undertaking this type of program approach must be able to obtain accurate information on the potential impact of their program. Unfortunately, little such information is usually available within the developing countries.

D. Materials Distribution

Many agencies have felt that the design process itself is somethig that can be omitted in the provision of emergency shelter and permanent housing. These agencies feel that the key to providing better housing is to provide adequate or improved construction materials. In some instances, the approach of simply providing construction materials is intended only to replace the same type of housing which has been destroyed by the disaster. But more recently, in relief operations in such countries as Guatemala, Honduras and Nicaragua, lightweight roofing materials were introduced in hopes that this would make the structures less susceptible to earthquake damage. Many agencies consider this to be the best approach to self-help housing and remain aloof from the design process altogether. Other agencies, however, have not only provided the construction materials, but have undertaken extensive housing education efforts, concentrating on improvement of building skills within the community and improvement of the housing units' performance through structural improvement. Use of this educational approach has only occured recently, and the results are not yet clear as to the relative success.

There appears to be only two major problems with the materials distribution approach. First, in those cases where the material being distributed is not a local material nor one that is manufactured within the country, large-scale distribution and introduction of the material into the building practice may create a demand which cannot be met after the relief and reconstruction operations cease. While the initial materials may have been provided free or at a low cost, the materials necessary to maintain the unit or repair it may not be available. Second, the introduction of the material may necessitate changes in the basic design of the unit, and while the unit may be strengthened in one area, unless proper attention is given to all the details, it may be weakened in others.

E. Core Housing.

A new approach which has been used recently in a number of countries is the development of the core house concept. In this approach, a relief agency provides a simple, low-cost frame which can be used as an emergency shelter or temporary structure The frame and the roof are designed to be permanent, and, over a period of years, the occupants can then in-fill the walls with whatever materials are available to make a more permanent and formal structure. This approach was utilized by CARE in Guatemala with varying degrees of success, depending upon the area in which the program was conducted and the extent to which accompanying education programs were utilized along with the construction of the core. It is too early to tell whether or not this approach will have long-term desired results.

III. CONCLUSIONS.

On the basis of a review of the strategies and approaches employed by intervenors, several conclusions relating to the provision of housing and shelter can be made :

A. The best way to affect better emergency shelter and post-disaster housing programs is to work within the disaster-prone area to develop strategies and approaches before a disaster occurs.

B. The only way a relief agency can be affective in the post-disaster period is to be familiar with, and, if possible, have been active in the housing process before the disaster occurs.

C. The best policy for a government to undertake in the provision of shelter or housing after a disaster is to select an approach and make that approach mandatory for all intervenors.

The best STRATEGY to employ following natural disaster is that of encouraging rapid reconstruction of permanent housing and omitting, unless there is a real threat to life from environmental exposure, the emergency housing stage.

The best APPROACH to be employed in the rapid reconstruction of permanent housing is one which utilises both materials distribution and education. In this approach an analysis of the structures is made to determine whether or not the existing type of structure could be stabilized or structurally improved, and if so, several model structures are developed with the participation of the villagers. In the development of the model structures, the comments and criticisms of the villagers are incorporated into the design and into future models.It is the role of the intervenor to make sure that the designs which are being prepared are structurally safe as well as culturally and economically acceptable.

Following the development of the basic models which are intended to be used after a disaster, suitable educational meterials, construction aids, and training materials are developed, and,as soon as the training aids are ready, a number of model houses are built throughout the disaster area. During the construction of these model houses the educational materials are used and checked and if necessary revised. Following the construction of the models, the training materials are produced in sufficient quantities and placed within the communities. (The intervenor may wish to incorporate the housing designs in normal housing programs and may actively promote the use of the model or design in the community before a disaster occurs In that case, sufficient quantities should be available for retrieval after a disaster, even if the improvements are being promoted before a disaster occurs.)

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