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ISSUES RELATED TO THE PROVISION OF EMERGENCY SHELTER IN WINTER CONDITIONS

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INTRODUCTION

On November 24, 1976, at 2:45 P.M. (local time), eastern Turkey was struck by an earthquake with an intensity of 7.4 on the Richter Scale. The result of this earthquake was severe damage in the districts of Muradiye, Çaldiran, Erciş, and Ozalp in Van Province and the districts of Diyadin and Taşliçay in Ağri Province. Within these six districts, 207 villages were damaged and at least 3,921 persons were killed.

The response to the disaster by both the Turkish Government and the international community was generous and immediate. More than two hundred and sixty airplane-loads of relief supplies were flown into the Van Airport, and many truckloads of supplies were brought from such commercial centers as Ankara and Erzurum.

Of the buildings affected by the earthquake, 9,157 were classified as severely damaged or collapsed; 1,784 were considered moderately damaged; and 2,696 were lightly damaged. This resulted in the need for shelter in winter conditions for approximately 65,000 people. Snow fell intermittently for several days following the earthquake, and the low temperature was reported to have been $-12^{o}C$.

A study of the provision of emergency shelter after this disaster is particularly significant because the earthquake occurred under winter conditions. Such a situation highlights concerns as to whether the provision of emergency shelter by organizations from outside the affected country is appropriate and useful, and whether failure to provide emergency shelter immediately will precipitate a high death rate.

The purpose of this paper is to identify and clarify the salient issues and options related to emergency shelter provision in winter conditions, based on the experience in Turkey in 1976.

I. Emergency Shelter in the Immediate Post-Disaster Period

Within the first forty-eight hours after the earthquake, people in the affected areas had at least four possible alternatives for emergency shelter.

Option 1: To take protection in non-damaged or only slightly damaged buildings within the affected area.

Experience: Field observations indicate that people did not use non-damaged or slightly damaged buildings in the affected areas as emergency shelter. The reason given was the fear of aftershocks. In Muradiye, perhaps the best example of this fear was the fact that only after two months were employees willing to move back into an undamaged, reinforced concrete telecommunications building.

Option 2: To self-construct temporary shelters.

Experience: This was indeed one of the most common methods of providing shelter for oneself and family. The debris used in construction often included doors, windows, boards, poles and, if available, corrugated iron sheets. Such shelters were usually covered with plastic or with layers of canvas (from donated tents). Plastic appeared to be one of the more important building materials.

Another rather unique self-constructed shelter was built by digging a trench into sloping ground, then constructing a roof of dirt supported with beams taken from the rubble. This did not, however, appear to be a widespread technique. The owner had gotten the idea when in military training. The digging began immediately after his unharmed family had been dug out of their collapsed house. The construction of the shelter required two days of digging with four people working, and it cost nothing beyond the labor.

This underground shelter was used primarily for sleeping. It was easy to heat and considered quite safe. The owner also had a Red Crescent tent in which he stored relief goods, and a shelter made of boards, doors, etc., covered with plastic, in which the family lived during the day.

All of the self-constructed emergency shelters visited by this author were warm and appeared quite livable. Their cost was probably nothing beyond the labor, and their location was decided by the owner/builder.

Comments: Further study of the use of self-constructed shelter would be valuable. Of interest would be reliable data on the percentage of people who chose this option and their rationale for doing so. Most people chose to stay in the damaged areas for at least the first several weeks. Unanswered questions remain about how long it took people to build a shelter, how long people lived in them, why those people who chose other options did so, and how satisfactory were the self-constructed emergency shelters.

It was generally assumed that, with the onslaught of more hostile winter weather, people would leave self-constructed shelters for the winterized tents located in tent camps. It would be helpful to have information about what courses of action were taken by the people for the duration of the 1976-77 winter in Turkey.

Option 3: To move into a Kizilay (Red Crescent) tent.

Experience: The Turkish Army and the rescue workers distributed 11,601 of these canvas tents which are produced by the Red Crescent. Tents were given to every family, regardless of need, both because of the logistical problems and in order to minimize the conflict caused by unequal distribution. These tents were considered summer tents due to the fact that the canvas was lightweight, the tent did not have a liner, and it lacked an opening for a heater flue. The tents were, however, used for emergency shelter. Ways of adapting the tents to the climate included: stacking several tents to make the inside warmer; setting the Kizilay tent inside other tents; and cutting up the tent to be used as roofing material for self-constructed shelters.

After two months, some of the tents were still being used as living quarters. One family, that was visited by the author, had elected to use a combination of tents as living quarters and had reserved their very nicely constructed shelter, built from debris, for guests.

Two months after the earthquake, many of the smaller Kizilay tents were being used as storage units for personal possessions.

Comments: At two months post-disaster, no small Kizilay tent was observed in use as an emergency shelter, although larger tents were in use as living units. This may indicate that the size of the tent dictates its usefulness.

Further study should be carried out to analyze the actual use of tents in the period immediately following the disaster. The tents which were used demonstrated their usefulness. It would be helpful, however, to have more data on the percentage of tents actually used and the manner in which they were used. If, for example, small tents are used primarily for storage, then it may indicate that such tents are not appropriate as shelter units, or that shelter units are not needed. If the need is for a storage unit, perhaps alternatives to the tent might be better.

The standard Kizilay response, to provide every family in an affected area with a tent, is perhaps evidence of an important sociological consideration in the provision of any emergency shelter of any type.

Option 4: To seek shelter in a non-affected area.

Experience: After the earthquake, many people gradually left their homesites and moved to areas which were unaffected. It is the official policy of the Government to encourage this movement. (The exact reasons for this policy are unclear, but the motives appear to be mainly political.) To encourage this movement, the Government set up tents and distribution centers at the edges of the larger towns, especially in Van. For persons who left their homesites, a payment for maintenance of the family was provided. As word spread about the payments, the free food and other services, the number of people moving to Van increased substantially. One week after the earthquake, it was reported that only 2,000 people had migrated to Van. By the third week, that number had risen to over 7,000. By the end of the second month, the mayor of Van asserted that 40,000 people had migrated to Van.*

*These figures are speculative and were not verified by the author.

It is not clear whether or not all these services were provided at the village level. Leaving the disaster area in search of emergency shelter is not a common phenomenon following disasters; people will almost certainly choose to stay in order to care for personal property, even if it means living in minimal shelters. The figures mentioned above seem to indicate that the majority of services and payments were provided only in the larger towns. It is too early to tell what the ultimate effect of this policy will be, and there remain many unanswered questions, including:

a. How did the policy affect long-term reconstruction?

b. What were the costs of operating the camps versus distribution of goods and services in-place?

c. What were the costs to the host communities?

d. Did the Government foresee the mass movement to Van, and were they prepared for it?

e. Could the maintenance payments have been more useful as an incentive to rebuild on-site?

f. Would such a policy have been instituted in warm weather?

g. Did the entire family move, or only certain members, in order to collect the maintenance payments?

h. Were maintenance payments comparable to the local income scale?

II. Temporary Shelter for the Duration of Winter

By the third and fourth weeks following the earthquake, the shelter possibilities had expanded beyond the initial four options. They included the following:

Option 5: Winterized tents.

Experience: Cold weather tents were requested on the basis that the Kizilay tents were not adequate for winter conditions. The winterized tents were considered a better alternative and were used as such.

Although approximately 300 U.S. Army tents were set up in Van by the second week, only about ten were occupied at that time. By the fourth week, the occupancy rate had increased significantly, and by the second month, they were full. The rate of occupancy was related to:

a. The decision of the families to leave the affected areas as mentioned in Option 4.

b. The fact that the weather had been unseasonably warm immediately after the disaster, thereby temporarily nullifying the pressing need for winterized tents. As time progressed, however, concern for possible worsening weather stimulated some families to move.

c. The time it took for word to reach remote villages that the tents and other services were available.

Comments: Winterized tents may have been donated with the idea of providing emergency shelter in the immediate post-earthquake period, but they were not used as emergency shelter during that period for the following reasons:

a. As stated above, they do not appear to have been needed in that period.

b. The logistics of transport from out-of-country to the site required several days.

c. Erection was a significant problem because each type of tent was constructed differently, and Turkish erection crews were unfamiliar with the different erection procedures. This was particularly a problem when the instructions were printed in a foreign language.

The American tents were finally erected by a 46-man tent erection crew provided by the U.S. Army. The inflatable Dutch tents also required three expatriates, and at least three days per tent, to erect.

One incident bears mention at this point. When asked by international relief agencies what type of assistance was needed, the Turkish Government requested "polar" tents. The resulting semantic confusion (although the intent of the request and all supporting information from the disaster area clearly indicated snow and very severe weather possibilities) led to the sending of Polar ™ brandname camping tents, totally inappropriate to the situation. Hundreds of other camping tents were also provided by other donors, but the Government of Turkey refused to distribute them.

In summary, the donated winterized tents did not arrive in time for use as immediate post-disaster shelter. However, these tents did function as useful shelter for those people who chose to migrate to tent camps after the second week and who remained there for several months.

One of the major variables in the occupancy of tent camps was whether the camps were located near the affected areas. There were reports, however, that even when the camps were set up at the edge of a village, they were still not occupied by the third week. This reflects a lack of need at that time for shelter, the sociological unacceptability of camps in general, and simply the desire to remain on one's own property.

Option 6: Wood structures.

Experience: Near the district center of Muradiye, the Ministry of Reconstruction built emergency shelters made of pressboard (or flakeboard) with a roof of corrugated iron sheeting. The size was approximately three meters by five meters at a cost of approximately four hundred dollars each. They were constructed by the fourth week.

Many of the houses were lined with plastic, and residents estimated that they required much less fuel to heat than did tents. These shelters were considered to be very adequate by the victims.

Another type of wooden shelter was a Swiss-produced panelized structure capable of temporarily housing three hundred people. The one visited was not known to have been used as emergency shelter. Setting it up required a Swiss construction crew.

Comments: The emergency shelters built of pressboard by the Ministry of Reconstruction appear to be a viable option. The materials are produced within the country and require no specialized erection procedure. They were easier to heat and provided a very usable living space. Further study should be carried out, however, to determine if these shelters are only used temporarily, or whether they become permanent.

Option 7: Mobile homes (caravans).

Experience: One local Government official strongly argued that the emergency shelters provided should be small mobile homes. His reasons were that caravans were mobile and could be parked anywhere; they could be re-used; and the raised floor would alleviate the problems of living on the ground. He felt that they would take less fuel to heat and might only cost what several tents cost, if constructed locally. His models were mobile homes used for some years by the Highway Department as temporary housing for maintenance crews. They consisted of a shell with a heating stove and beds.

Option 8: Evacuation to other regions of the country.

Experience: The Government offered to pay 1,500 TL per family of four with 200 TL additional for each member over four to families interested in temporarily moving (for the winter) to other provinces. The benefits to the move also included transportation costs, purchase of cattle, housing and food. Reportedly, 1,430 families moved.

Comments: Further study is required to evaluate the effectiveness and consequences of this approach.

III. Summary of Issues Relating to the Provision of Emergency Shelter in Winter Conditions

A. Need for Shelter: There was, without question, a need for emergency shelter in view of the winter conditions. Although no exposure deaths were verified, the primary needs for shelter included: a place to gather, store and protect belongings; a point of reference for the family to reestablish its normal living patterns; and, after the initial period, a place which offered protection from the cold.

B. Provision of Emergency Shelter: People responded to the need for shelter by construcing something for protection. The two sources of materials were debris from the damaged buildings and donated goods (usually tents). While the diversity of shelter types indicates no single solution is best and gives credibility to the self-constructed shelter, it also indicates that donated materials can be useful, although not always as originally intended.

C. Tents: Where people themselves had set up tents which were in use as living quarters, no tent was observed which had not been modified, either to make it better insulated or to provide more room. Use of the tent in forms other than as designed perhaps indicates more the need of the canvas as a building material, than the need for a formal tent.

D. Donated Shelter: Even with the concern for cold weather and a quite efficient relief system, tents and shelters donated from outside the country could not be utilized in the initial emergency period, at least partially due to distribution problems. This evidence suggests that, if emergency shelter is needed immediately post-disaster, it must come from in-country and probably from a local depot. Donors' contributions can probably be more beneficial if oriented toward providing materials which can be used to improve temporary shelter and which can be re-used in permanent reconstruction.

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