

WHAT'S THE BIG DEAL ABOUT TEMPORARY HOUSING? PLANNING CONSIDERATIONS FOR TEMPORARY ACCOMMODATION AFTER DISASTERS: EXAMPLE OF THE 1999 TURKISH EARTHQUAKES¹

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Abstract

This paper is Part 2 of a 2-part series on temporary accommodation after disasters. Both papers are based on a case study of the 1999 earthquakes in the Marmara and Bolu regions of Turkey. Part 1 examines the different types of temporary accommodation possible after a disaster. This paper, Part 2, looks at the necessary planning considerations for temporary accommodation.

Preparedness planning before the disaster is necessary to find the 'best-fit' solution for temporary accommodation. Preparedness planning includes understanding: pre-disaster vulnerabilities; regional and local issues; climate; long-term effects of temporary accommodation; project procurement, planning and construction time; permanent reconstruction strategy and timing; and location. Matching these planning considerations with a type or combination of types of temporary accommodation will produce the 'best-fit' solution.

Immediately after the disaster, it is necessary to reassess the temporary accommodation strategy to see if it fits the particular disaster situation. If it fits, the organisation may proceed with the plan. If it does not fit, they must reassess until a good solution is found

Temporary housing; temporary accommodation; planning; recovery; disasters; Turkey

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INTRODUCTION: THE 'BEST-FIT' SOLUTION AND PREPAREDNESS

Temporary accommodation refers to disaster-affected families' interim lodging between the onset of the disaster and the period when they regain permanent housing. It fills the gap between the immediate relief phase and the later reconstruction phase. This is an important phase in the disaster recovery process that is often overlooked by governments, NGOs and aid organisations.

Each disaster situation is unique. As such, it will need a unique set of appropriate actions. The 'best-fit' solution for temporary accommodation must consider two specific elements: the potential of the particular community's human and financial resources; and the possibility of the temporary accommodation strategy to assist in the mid to long-term recovery after the disaster.

Finding the 'best-fit' solution for temporary accommodation means that emergency relief, rehabilitation and development response mechanisms need to be integrated and planned for in a holistic and coordinated manner. As well, 'best-fit' solutions provide the population with an *enabling* atmosphere, so they can adopt a recovery strategy that is appropriate to the organisation's and the population's needs (Chalinder, 1998).

To determine the 'best-fit' temporary accommodation solution for the particular disaster, both pre-disaster *preparedness planning* and immediate *post-disaster assessment* are necessary. Preparedness aims at ensuring that the necessary resources and information are in place prior to the disaster, or that they can be obtained promptly when needed.

However, "even if preparedness is good, it does not follow that managing a disaster will also be good...good planning does not automatically translate into good managing" (Quarantelli, 1993). Since each disaster situation is unique, it follows that the preparedness plan must be adapted and modified after the disaster to ensure the 'best-fit' solution for the particular disaster situation. This takes reassessment and planning after the disaster, as well as in advance of it.

This paper (Part 2 of a 2-part series) examines the planning considerations for temporary accommodation. These planning considerations need to occur in the pre-disaster preparedness period so as to determine a strategy for temporary accommodation before the disaster occurs. When and if the disaster occurs, the strategy must be reassessed to see if it fits the particular disaster situation. If it fits, the plan can be put into action. If it doesn't fit, more planning is needed. To point out the specific concerns that need to be addressed for temporary accommodation, I use the example of the 1999 earthquake disaster in Turkey.

Materials and Methods

The body of this current paper consists of the planning considerations that governments, NGOs and aid organisations must take into account before deciding on the 'best-fit' strategy for temporary accommodation for a particular disaster. Specifically, it will discuss the pre-disaster vulnerabilities; regional and local issues; climate; long-term effects of temporary accommodation; project procurement, planning and construction time; permanent reconstruction strategy and timing; and location.

I use the case study example of the temporary accommodation after the 1999 earthquake disaster in Turkey to illustrate the importance of these planning considerations. I conducted this case study research on temporary housing in Turkey in June and July 2000—ten months after the first devastating earthquake in August 1999 (Johnson, 2000). I also use additional information from other published case studies on temporary accommodation from various disasters in the United States and the 1986 earthquake in Kalamata City, Greece.

The last sections, the discussion and conclusion, will draw-out the most important points discussed in this paper.

However, I begin this present paper with a brief review of Part 1. This review looks at the definition of terms regarding post-disaster housing, types of temporary accommodation, and the 1999 Turkish earthquake case study.

A brief review of Part 1: definition of terms regarding stages of post-disaster housing, types of temporary accommodations and the 1999 Turkish earthquake case study

Stages of post-disaster housing

In disaster research, the terms *housing* and *sheltering* are often used interchangeably, with little distinction between the terms. Quarantelli (1995) makes a distinction between these terms in his definition of the four stages of post-disaster housing. He suggests that the division between *housing* and *sheltering* after a disaster is made on the basis that during *sheltering*, normal daily activities are put on hold, whereas *housing* involves the resumption of household responsibilities and activities, i.e. food preparation, laundry, socialising, work, school and recreation.

Quarantelli uses the following definitions, which show that there are in fact four stages in post-disaster reconstruction:

1. *Emergency shelter*: a place where a family stays during the height of the emergency. This can be a public facility or the home of a friend or family member. Since the stay is so short there is no provision of food or other services.

2. *Temporary shelter*: a place where a family resides immediately following the disaster for an expected short stay. This can be a tent, a self-built shelter, a public facility, the home of family or friends, or a second home. The length of stay dictates the need for food, possibly medical provision and other services.
3. *Temporary housing*: a place where a family resides temporarily *and* resumes their household responsibilities and daily activities. This can be a prefabricated temporary house, a winterised tent, a self-built shelter, a mobile home, an apartment, or the home of family member or friend.
4. *Permanent housing*: the place where a family will reside permanently after the disaster. This refers to the family returning to their rebuilt home or moving into new permanent quarters in the community.

Types of temporary accommodation

In addition to the four terms, as defined above by Quarantelli, I also use the term *temporary accommodation*. The term *temporary accommodation* is used to refer to all the different types of temporary lodging commonly utilised after a disaster. It is important to distinguish between *temporary accommodation* and *temporary housing*, since *temporary housing* usually refers only to very specific types of *temporary accommodation* i.e. dwellings clustered in settlements and built by organisations using industrialised components and standardised designs. But *temporary accommodation* can also take the form of tents; self-built shelters; mobile homes; homes of family or friends' homes; or apartments. However, in all of these types of *temporary accommodation* the family will resume their household responsibilities and activities in a location that is intended to be temporary.

In the disaster-affected area in Turkey I found that families utilised five types of temporary accommodation: prefabricated temporary houses, wooden temporary houses, paper temporary houses, winterised tents, and self-built shelters. Case studies by other researchers regarding different disasters showed that families also utilised mobile homes, public facilities retrofitted as lodging, homes of family or friends, and rented apartments. Each type of accommodation differs in its physical character; in its effect in aiding the recovery of the population; and in its function as part of the stages of post-disaster housing. It is important to understand the differences between these types when planning a strategy for temporary accommodation because each type serves a slightly different function. Please see Part 1 for a full explanation².

Turkey: the 1999 earthquakes in the Marmara and Bolu Regions

In the latter half of 1999, two devastating earthquakes shook the Marmara and Bolu regions of Turkey, the industrial heartland of the country to the east of Istanbul. It is estimated that, in total, 380,000 buildings were damaged or had collapsed. A total of 120,000 dwellings were damaged beyond repair leaving more than 250,000 people in need of housing.

² See footnote 1.

The Turkish government instigated a three step accommodation strategy for those affected by the earthquake, beginning with the provision of temporary shelter, then temporary housing, and later permanent housing. Tents were provided as temporary shelter for earthquake survivors throughout the affected areas immediately following both earthquakes. Since the winter after the earthquake was quite severe, relief organizations distributed as many winterised tents as possible (figure 1). Many people were also living in small self-provided tent camps set up near their destroyed homes or they constructed self-made structures to serve as temporary lodging (figure 2).

In October 1999 the Turkish Ministry of Housing announced plans to provide approximately 47,000 prefabricated temporary houses to accommodate up to 151,000 of the people affected by the earthquakes (figures 3 and 4). In August 2000, the first anniversary of the earthquake, governments and NGOs had provided 42,000 prefabricated houses, housing a total of 150,000 people. By then, the majority of the population were set up in temporary housing, but approximately 30,000 people were still living in tents and 70,000 people had secured their own temporary accommodation.



Figure 1: Winterised tents



Figure 2: Self-built shelters

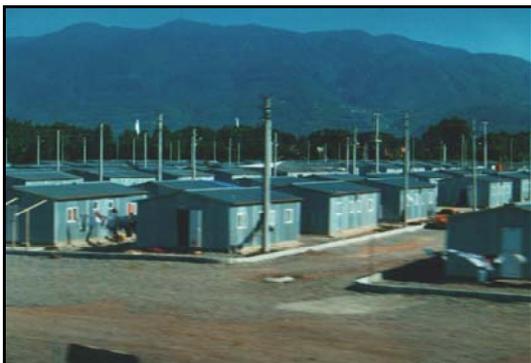


Figure 3: Prefabricated temporary houses



Figure 4: Paper temporary house

Planning considerations for temporary accommodation

This section examines the planning considerations that organisations must take into account when choosing a temporary accommodation strategy. Decision-makers may choose one, or a combination of several types of temporary accommodation, after making all the necessary planning considerations outlined in this section.

Ideally, a strategy for temporary accommodation is designed before the disaster. Decision-makers would have already considered the options and issues for temporary accommodation and reconstruction, spending the appropriate amount of time to do this planning properly. Therefore, in the aftermath of the disaster, it is only necessary to assess the amount of damage and put the plan into action. If this pre-planning has not occurred before the disaster it is nonetheless imperative that decision-makers consider these issues before making and implementing their plan for temporary accommodation; of course it is much more difficult to do this after the disaster when the population is in urgent need of a housing solution.

Figure 5 shows the strategy for finding the 'best-fit' temporary accommodation. The decision to plan is best taken in advance of the disaster. A government may make the decision to plan or not to plan. If they decide not to plan, they will wait for the disaster to strike and then they will be forced to make quick decisions regarding a reconstruction strategy. If they make the ideal decision to plan in advance, they must consider the various types of temporary accommodation available in conjunction with the other planning variables. These variables are revisited until a feasible strategy can be deduced.

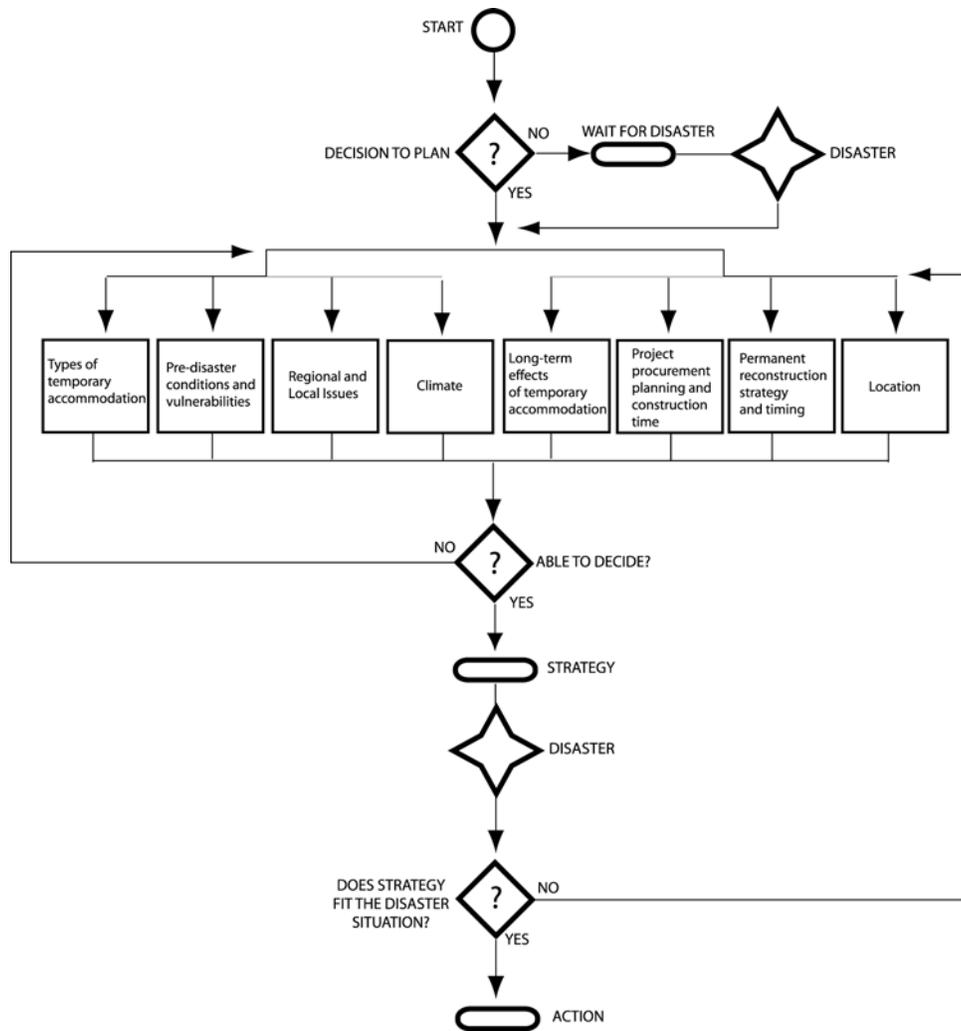


Figure 5: Strategy for finding the ‘best-fit’ temporary accommodation

Even in the ideal situation—with systematic planning and decision-making in advance of the disaster—when and if a disaster occurs, the organisation must reassess the strategy to see if it fits with the situation presented by the particular disaster. If it fits they may proceed with the strategy directly. If it does not fit, they must reconsider the planning variables. The planning variables on the left of the diagram will not be altered by the disaster. However, the planning variables on the right will change depending on the particular disaster situation. It is these variables that must be reassessed after the disaster.

Pre-disaster vulnerabilities

- What are the economic, social and cultural vulnerabilities of the population?
 - What are the vulnerabilities in the built environment? Which buildings might suffer damage in the disaster?
-

It is necessary to understand the economic, social, environmental and cultural vulnerabilities that exist prior to the disaster. It is these vulnerabilities that contribute to the disaster. This is what Blakie et al. (1994) refer to as the *pressure and release model of vulnerability*. In this model, they discuss the historical precedents that place a society at risk. Understanding the vulnerabilities of the population allows decision-makers the opportunity to reduce these vulnerabilities through the application of temporary accommodation. The International Federation of Red Cross and Red Crescent concur:

Action at the local level alone will not bring genuine recovery from disasters. Root causes need identifying and tackling. In many cases, nature's contribution to 'natural' disasters is simple: to expose the effects of deeper, structural causes—from global warming and unplanned urbanisation to trade liberalisation and marginalisation. The effects of man's action are often evident—many natural catastrophes are un/natural in their origins (IFRC, 2001).

Turkey case study

The vulnerabilities of the disaster-affected population in Turkey were due to economic forces in the region. The disaster-affected region is the industrial heartland of Turkey. It had experienced exponential population growth in the previous twenty years. Rapid migration into this region created a housing shortage. Many of these recent migrants opted to be apartment renters, rather than landowners. This increased demand for rental housing caused rapid construction of high-rise buildings in most of the cities and towns in the Marmara and Bolu regions.

Unfortunately, this construction boom occurred with little quality control supervision from government inspection agencies. The damaged and collapsed housing that caused most of the 17,000 deaths during the earthquakes was due to the use of cheap reinforcement and improper mixing of concrete in the high-rise structures. The death and destruction caused by high-rise structures during the earthquake led to a general distrust among the population for the use of concrete and construction of high-rise buildings for housing. The tragic earthquake disaster pointed out the need for safe and affordable housing in the region. The preference moved toward prefabricated single storey housing because it is recognised as being safe.

Regional and local issues

- How many families may need temporary accommodation?
 - What are the cultural peculiarities?
 - What percentage of the population are renters? What percentage are landowners? Will they need land for temporary accommodation or do they already have land?
 - Will people tend to migrate away from the disaster-affected area in search of jobs and housing?
-

Governments, NGOs and aid organisations must have knowledge of the regional and local issues that are specific to the particular disaster situation. For example, these agencies need to understand the possible extent of the housing deficit, type of industry in the region; the amount of time, skills, and disposition that the population has toward the housing problem; the migration possibilities within and away from disaster area; and cultural concerns.

Landownership is a determinant of the type of temporary accommodation strategy that is appropriate (Lizarralde and Davidson, 2001). If landowners have adequate space on their land, they can erect temporary accommodation next to their damaged home during the rebuilding process. If they do not have adequate space on their land, they may need temporary accommodation as well as a new site. If the families are not landowners, but apartment renters, they will also need temporary accommodation and a site. To decide on the type of temporary accommodation strategy, it is useful that decision-makers have knowledge of the landownership situation, and more specifically whether families will be able to erect temporary accommodation on their owned land or whether they will need land provided for them.

There are also many concerns in relation to the issue of culture and housing. Cultural particularities of the disaster-affected population need to be of concern to housing providers. This is especially true for international agencies that may not be familiar with the local customs. Cultural issues become more important in the rural areas where families have needs for additional space for belongings, animals and home industries. In settlement design, the safety and comfort of women and children is important.

Turkey Case Study

The types and amount of temporary accommodation necessary must be based on the specific regional and local situations. In the case of Turkey, the numbers of people in need of temporary accommodation was found by counting the numbers of people residing in the tent camps who expressed the need for longer-term accommodation. Since the area is mainly industrial, it was important that a housing solution be found so that people could resume working as soon as possible. The

agencies were well aware that the recent migrants would be tempted to migrate away from the area in search of better housing and jobs, which could adversely affect the local, regional and even national economy. Families mainly worked outside of the home, so space for animals or light home-industry was not a crucial issue for the housing strategy.

I observed few particular provisions for local cultural needs in the temporary accommodations I visited in Turkey. All Turks take off their shoes before entering a dwelling, so families always made a place for this in their temporary home. Often they constructed additions in the front of the dwelling where they and their guests could remove their shoes. Also, the temporary settlements included community centres. Programs at these centres were mainly targeted toward training women for cottage industries and other job skills, which was appropriate in that specific case.

Another factor that was important for the application of temporary housing in Turkey relates to the nomadic qualities of the disaster-affected population. Since many of the people affected by the earthquakes were relatively recent migrants to the area and few of them were landowners, they were not troubled by changing their place of residence within the city or even relocating to another city. Therefore, the relationship between the location of the temporary housing settlements and the location of the pre-disaster housing was not an issue, and people moved around, as it was necessary to obtain housing.

Climate

- What type of temporary accommodation is necessary to provide shelter from the elements?
 - Do families usually cook, eat or sleep outside? Can they do this in the temporary accommodation?
-

The climate of the disaster-affected area is a determinant for the type of temporary accommodation. The chosen type of temporary accommodation must provide adequate shelter from the elements. However, in mild climates, there may be no need to spend money and resources on weather-resistant temporary accommodation. In mild climates where there is less need for shelter from the elements, people can make-do in tents or in housing with little insulation. This is especially true for places where the culture is to cook outside, or to use outside or open spaces for living, such as in tropical regions in Latin America.

Turkey case study

However, the climate in the Marmara region of Turkey is hot during the summer months and can drop below freezing in the winter months. In the mountainous region of Bolu, snow is not uncommon during the winter. For this reason, regular tents do not provide adequate shelter from the elements. The government and aid

agencies provided winterised tents to shelter those made homeless by the disaster for the first winter after the earthquake. Temporary housing was designed to withstand the cold winters and hot summers.

Long-term effects of temporary accommodation

- Pre-planning for temporary accommodation reduces the need for quick decision-making after the disaster.
 - Decisions made regarding temporary accommodation have long-term effects.
 - Temporary housing may change the physical structure of the city. This must be planned for from the outset of the project.
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Preparedness planning before the disaster can reduce the negative long-term affects of quick decision-making after the disaster. Nonetheless, governments, NGOs and aid organisations will be forced to make some rapid, yet important, decisions immediately after the disaster. This is also true for decisions made and strategies implemented regarding temporary accommodation.

It is easy to criticize in hindsight the decisions made immediately in the aftermath of a disaster. Governments, NGOs and aid organisations must take decisions quickly and immediately after the disaster in order to offer critical aid to feed, shelter and treat the victims of disaster. Decisions taken are seen as necessary in the emergency situation; any critique of these decisions must understand the pressure and urgency under which they were made. However, options that seem good at the time may not be beneficial in the long-term.

The decisions made about temporary accommodation strategies can have long-term effects. If money and resources are concentrated on temporary accommodation, the permanent reconstruction process can be delayed. Also, temporary accommodation tends to be used longer than originally anticipated and this can affect the form of the city and the region, as reconstruction processes have to take place around the temporary accommodation. As time passes, temporary accommodation takes on a more permanent status. Indeed, in many countries, there is, in reality, no such thing as a 'temporary house.' Any housing will be used and reused—nobody will dare to pull one down. For these reasons, decision-makers need to consider the long-term when planning for supposedly short to mid-term temporary accommodation.

Turkey case study

The decisions as to the type and location of temporary housing can change the physical structure of the city. This was true in the case of Turkey. The temporary housing settlements are built on land that was previously wilderness or farmland. These settlements have enlarged the physical area of the city in a permanent way (figure 6). It is unlikely that the land will be returned to its previous use, even if the temporary housing settlements are eventually demolished. As reconstruction occurs

and time passes, the cities will begin to function and develop around the temporary housing, and the settlements will become a permanent fixture.

The large temporary housing settlements in the Marmara region of Turkey are similar to suburbs. They are situated on the periphery of the city, each dwelling has running water and electricity, and each plot has space for additions to the dwelling as well as a garden. Public transportation, garbage collection, shops and community centres service the settlements.

I observed a sense of permanence in these settlements. The families have modified their dwellings to suit their own needs, and many businesses have sprung up to service the communities. If the temporary housing is to be dismantled, it will take unpopular political will to remove people from these homes—a demand that is not likely to increase a politician’s popularity—unless a higher quality dwelling is offered.

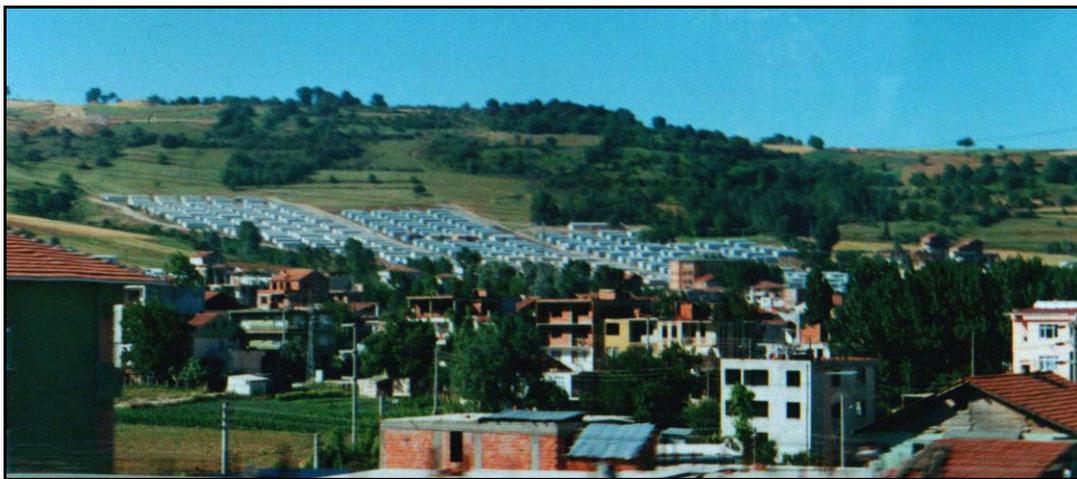


Figure 6: (In the background) new temporary houses on the outskirts of town

Project procurement, planning and construction time

- What is a realistic timeline for the procurement, planning and construction of the temporary accommodation?
 - Pre-planning the location for temporary accommodation can speed up the process after the disaster.
 - Pre-determined contracts for land, construction and houses reduce the amount of time necessary after the disaster.
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A realistic timeline must be made for the procurement, planning and construction of temporary accommodation. This will make the transition between stages of post-disaster housing smoother.

Case studies show that the procurement, planning and construction of temporary accommodation typically take longer than expected (Bolin, 1982; Dandoulaki, 1992; Johnson, 2000). If preparedness plans are made before the disaster, this time can be reduced, since much time is lost in securing reasonable locations for temporary accommodation. If these locations are determined before the disaster, and if agreements have been made between landowners and agencies for leasing land for temporary accommodation when the need arises, the procurement and planning time after the disaster can be reduced.

Turkey and Greece case studies

In Turkey, the plans for temporary housing were first announced in October 1999 when they forecast that 47,000 temporary houses would be available by the end of January 2000. At the end of January, there were only 17,000 temporary houses available. This goal of 47,000 temporary houses actually took about one year to realise and not the four months originally announced. This delay was due, in a large part, to problems in securing convenient locations for the temporary housing settlements.

Dandoulaki (1992), in her case study on the temporary housing after the 1986 earthquake in Kalamata City, Greece, found that by the time the temporary houses were completed, there was less demand for them. Since the temporary housing projects took longer than expected, families had taken it upon themselves to find other temporary accommodation, and they no longer needed the temporary houses.

Permanent reconstruction strategy and timing

- How long will the temporary accommodation be needed? How long will it be after the disaster until permanent housing is available?
 - Will the temporary accommodation strategy delay the permanent reconstruction? For how long? Is this worth it?
 - What type of temporary accommodation is the 'best-fit' considering the timing of the permanent reconstruction?
-

Before deciding on the temporary accommodation strategy, governments, NGOs and aid organisations must predict, realistically, when the permanent reconstruction will take place. If permanent houses will be available within one to two years after the disaster, the temporary accommodation type only needs to be effective for this amount of time. Therefore, winterised tents, self-built shelters, inexpensive temporary houses—such as paper houses, mobile units and family or friends' homes—may suffice for the interim period. However, if the reconstruction process is expected to take longer, more durable temporary accommodation is necessary—prefabricated or wooden temporary housing may be needed.

Turkey case study

In Turkey, the government planned to begin the reconstruction of permanent homes approximately one year after the disaster. This meant that permanent housing for the entire affected population would not be available until at least a year and a half, or more, after the disaster. For this reason, the government in Turkey constructed durable temporary housing. However, it is also true that the temporary housing program delayed the permanent reconstruction program further, since local resources were used for the production of the temporary housing.

It is necessary to look at the amount of time the temporary accommodation will be needed before deciding on the type of temporary accommodation that will be the 'best-fit.' After the disaster there was an urgent need for safe and affordable housing in this region of Turkey. The Turkish government had an existing policy of providing temporary housing after disasters. This fact—coupled with the immense and urgent need for safe and affordable housing—led them to opt for a temporary housing strategy over other temporary accommodation strategies. This strategy was initially more expensive; it consumed more resources during construction; but it will (as it was intended) ultimately last longer than other types of temporary accommodation.

The government could have chosen to opt for a temporary accommodation solution such as winterised tents or sheltering in public facilities. These types of accommodation would have consumed fewer resources; they could have been constructed more quickly; but would endure less time. However, the government forecasted that it would take at least a year, and probably longer, for the construction of permanent housing. Therefore a more durable temporary accommodation strategy of temporary housing was necessary.

Location

- The location of temporary settlements must be convenient for the families or serviced by frequent public transportation.
 - Will the families be willing to relocate temporarily, if needed?
-

The location of temporary accommodation is important for the recovery of the population. Often, temporary housing is located outside the devastated city—far away from work, schools, and commerce. In many cases the poor choice of location of temporary accommodation means that it is not used, and the families who are supposed to live there ultimately reject it. This is obviously a waste of resources, not to mention that the families in question might be without adequate temporary accommodation for a long period of time.

The location of temporary housing, in particular, must be close to work opportunities or serviced by frequent public transportation. Also, families may prefer to stay close to their pre-disaster locality to benefit from kinship ties and familiarity of the area.

Turkey case study

In Turkey, the temporary housing settlements were located both within and outside the urban areas. The periphery locations were serviced with public transportation, and local businesses set up shop within the settlements. I did not observe any temporary housing settlements that were inconveniently located or especially remote without transportation services.

The temporary accommodation strategy must reflect the population's inclination toward temporary relocation. In Turkey, renters were not bothered by relocating to a nearby town if it meant that they could find temporary accommodation. As long as the new location was convenient for transportation, work, schools, and shopping, they were happy to move. Since many of the renters were new migrants to the area, they had less local ties and therefore were freer to move around.

However, this was not the case for landowners. Landowners wished to stay close to or even on their property to lessen the disruption in their lives and to oversee or participate in the rebuilding of their home.

This fact, specific to the Turkish case, had implications for temporary accommodation strategies. The location choice of temporary settlements did not have to account for pre-disaster location of the families—except in the case of landowners—as long as the families were conveniently situated. Landowners who preferred to have temporary accommodations on or near their property constructed self-built shelters.

Discussion

Ideally, planning considerations for temporary accommodation is made in the preparedness stage before the disaster. Then, plans must be reassessed after the disaster to see if the pre-planning fits the particular disaster situation.

Before the disaster, the types of temporary accommodation that are possible are evident. Organisations may choose from several types. The type or combination of types chosen depends on the planning variables discussed in this paper. The pre-disaster vulnerabilities, the regional and local issues and the climate are known before the disaster and do not alter greatly after the disaster occurs. The other planning considerations: the long-term effects of temporary accommodation; the project procurement, planning and construction time; the permanent reconstruction strategy and timing; and the possible locations of temporary accommodation must be reassessed after the disaster to see if they still fit the particular disaster situation.

All of these planning considerations must be periodically revisited before and once, immediately after the disaster to make sure the long-term will be as positive as hoped for. If temporary accommodation is only needed for six months or a year, the type of temporary accommodation can well be less durable and consume fewer resources for construction. It must not prevent the process of permanent reconstruction to occur as quickly as possible after the disaster.

If the permanent reconstruction process is to take longer, the temporary accommodation type will need to be more durable, such as temporary housing, as defined earlier. Organisations must understand that more durable types of temporary accommodation take longer to build, are more expensive and consume many physical and technical resources during construction. Because of this, they may delay the permanent reconstruction process. Also, temporary housing may last longer than originally intended. In fact, it may take on a permanent status. The long-term effects of temporary housing—even those that are ‘unpredictable’—must be understood and planned for from the outset.

In Turkey, it is government policy to provide temporary housing for the disaster-affected population. Temporary housing had been used in past disasters, sometimes successfully and sometimes with little success. Many earlier problems ensued from the use of temporary housing in rural situations. The housing was too small for the large rural families with many animals and belongings. In some cases temporary housing was built in settlements that were badly located. Families would have preferred to have their temporary housing on or near their property, not in settlements far away from the activities of their daily lives.

After the 1999 Turkish earthquakes in the Marmara and Bolu regions, the government decided to implement temporary housing as per the existing policy. There was much public debate as to the effectiveness of temporary housing in this particular situation. Many people thought it was too expensive and resource consuming. They thought the money could be better spent on accelerated permanent reconstruction.

NGO's and other organisations followed the Turkish government's policy and helped to build many of the temporary housing settlements. It was true that it took longer than expected to build the temporary housing. It was also expensive; many units cost up to US\$8000 each, including the infrastructure and appliances.

However, much of the disaster-affected population is now well housed in good quality temporary houses. They will be able to live comfortably in this housing for a few years, if necessary. The permanent reconstruction process may take several years and this will not negatively affect the recovery of the population. This allows time for safe reconstruction. If safe reconstruction occurs, it will reduce the vulnerabilities of the built environment and lessen the negative impact of the next disaster.

It is important to point out that the temporary housing settlements in Turkey embody a sense of permanency. They have changed the physical structure of the cities and towns probably forever. When the time comes, it will be difficult to remove people from these homes, unless adequate, safe permanent housing is available. Therefore the temporary houses may remain indefinitely. This 'permanency' of temporary housing may prove to be a detriment in the long run, although the temporary housing provided in Turkey has certainly aided recovery for the affected population in the short to mid-term.

CONCLUSION

In conclusion, I would like to draw the reader's attention to what I consider to be the most important points of this paper.

- The 'best-fit' solution for temporary accommodation must look at the possible types in conjunction with the planning variables. The planning variables must be assessed before the disaster. After the disaster, they must be reassessed to make sure they fit the particular disaster situation.
- Planning can be done afterwards but it is ideal if it is done beforehand, this saves time and avoids costly quick decision-making mistakes.
- Understanding the *pre-disaster vulnerabilities* allows organisations to foresee both people's needs and what damage will be done to the built environment.
- The *regional and local issues* are particular to each area. A first-hand knowledge of the area will help organisations know how to react in the disaster situation.
- Different types of temporary accommodation have different *long-term effects*. These must be understood for any given strategy. Relatively durable solutions such as temporary housing can take on permanent characteristics; this must be understood and planned for from the outset.
- A realistic timeline for *project planning, procurement and construction* is necessary. Having contracts in place before the disaster can reduce the project delays.
- The amount of *time needed for permanent reconstruction* dictates the amount of time temporary accommodation will be needed. The type of temporary accommodation chosen is dependant on the amount of time it must endure.
- Temporary accommodation must be *conveniently located* or serviced by frequent public transportation. Knowing the predisposition of the population toward temporary relocation can help to plan the location of the temporary accommodation

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