Strategies for the Reuse of Temporary Housing

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Abstract

Providing sustainable temporary housing, notably in the disaster/crisis situation, depends on the ability to reuse units in a ‘second life’ since 1) units are often still in good condition after the few months or few years they are needed to house affected families; 2) on the whole, large investments in temporary housing make it very expensive in relation to its lifespan; 3) there is generally a scarcity of building resources in developing countries and disaster affected areas. Case studies in Turkey after the 1999 earthquakes show that there are several patterns of outcomes for temporary housing projects, i.e., rental housing, refurbishment/storage, recycling whole/part into new buildings/uses. The research reveals living patterns and design considerations for reuse of temporary housing, which can be integrated into strategic planning for temporary housing.

1 Introduction

Housing, even in a temporary location, is one of the main factors that can help a family re-establish a sense of normalcy in their lives in a chaotic and unpredictable post-disaster situation. However, the long-term outcomes of temporary housing projects have been problematic; what can be a valuable resource for the community often becomes a headache due to a lack of strategic design for sustainable outcomes for the units once they are no longer needed as ‘temporary housing’.

Temporary housing is defined as a place where families can re-establish household responsibilities and daily activities for an interim period until a permanent housing solution can be found (Quarantelli, 1995). It is acknowledged that temporary housing during a crisis has many similarities to that of the post-disaster temporary housing, however this research deals specifically with the post-disaster situation. Temporary housing has occurred after most recent large-scale disasters18 and the type of temporary housing varies from very basic shacks or distributed materials that are placed alongside the damaged properties, to the construction of temporary ‘suburban’ settlements including all the necessary amenities and infrastructure (see figures 1-3).

18 For example, formal temporary housing projects, meaning that units are specifically built by governments or non-governmental organisations (NGOs) for the purpose of temporary housing, have been implemented in: Thailand (2004); Bam, Iran (2003); Izmit, Turkey, (1999); Armenia, Colombia (1999); Kobe, Japan (1995); Florida, United States (1992); Loma Prieta, California, United States (1989); Kalamata, Greece (1986); Mexico City, Mexico (1985); Friuli, Italy (1976); Lice, Turkey (1975); Managua, Nicaragua (1972); Skopje, Macedonia (1963). However, after all disasters, families will use some kind of temporary housing which may or may not be formally provided temporary housing. Informal types of temporary housing include: building own shack, staying with relatives, renting an apartment, or staying in a hotel/resort.
Figure 1: Temporary housing on its way to Louisiana, USA, to house families made homeless by Hurricane Katrina (left) (source: www.katrinadestruction.com). Polyurethane igloos used as temporary housing in Nicaragua in 1976 (right) (source: Davis, 1978).

Figure 2: Temporary housing in Japan after the 1995 Kobe earthquake (left) and in Mexico after the 1985 Mexico City earthquake (right) (source: Comerio, 1998).

Figure 3a: Prefabricated settlements of temporary housing in Turkey after the 1999 earthquakes.
1.1 Problems of sustainability in current temporary housing practices

Temporary housing can promote success of the overall reconstruction process because it enables families to begin immediate recovery at the same as allowing adequate time for proper community planning to reduce risk and increase sustainability for future construction.

However, due to their nature, formal temporary housing projects (see footnote 1) are an extremely unsustainable form of housing because major investments are made in units that will only be used for a short amount of time (typically planned for 6 months to 3 years of use). Johnson (2006) shows that:

1. Temporary housing is very expensive in relation to its lifespan and in some extreme cases can cost the same amount as a permanent dwelling (Geipel, 1991).
2. Overspending on temporary housing can be wasteful and jeopardise the permanent housing programmes.
3. Materials (or units) have a much longer lifespan than their intended period of use.

Even though temporary housing is intended only for short-term use, the ensuing housing crisis in most post-disaster areas means that temporary housing has a great likelihood to become permanent, unplanned, housing for the lowest income residents.

This research seeks to understand how the permanence of temporary housing, or what we may call the ‘second life’ of temporary housing can actually be a sustainable practice, 1) economically, in terms of getting a longer life out of the upfront investments in temporary housing; 2) environmentally, by recycling buildings, building parts and rational use of land near the city; and 3) socially, by providing much needed low-cost housing to the market.

Based on the case study of the temporary housing programme in Turkey, this research looks at the long-term outcomes (4 years after construction) of four temporary housing projects in Düzce, one earthquake affected town. It asks: What happened to the temporary housing once it was no longer used to house disaster affected families? Which outcomes are the most sustainable, especially in addressing housing needs and rational urban planning? What sorts of design and planning considerations are needed?

2 Building Responses to the 1999 Earthquakes in Turkey

In August and November 1999, two large earthquakes devastated the industrialising urban regions to the east of Istanbul, including Izmit, Yalova, Adapazarı, Düzce and Bolu. Almost 18,000 people died, many more were injured, and 250,000 people were made homeless.

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19 Empirical information was gathered during a series of visits to Turkey between 2000 and 2005 and includes interviews, observations, reports and project documents. Information from this case study is complemented by other, referenced, case histories of temporary housing projects.
In response, the government, aid agencies and non-governmental organisations (NGOs) initiated a housing strategy requiring three distinct sequential stages of building; each installed on different sites and procured by separate teams. These were: 1) *emergency tents and winterised tents* put up and managed by the Red Crescent and the Military that were used for the first year as houses, schools and other types of facilities (figure 4) 2) *temporary housing* provided by the Turkish and foreign governments, international and local NGOs (figure 5) and 3) *Permanent housing* built through international loans by the government and also smaller projects by various NGO groups (figures 6 & 7). These formal responses to housing needs were also accompanied by many informally or privately built responses initiated by the affected families.

Figure 4: Families occupied winterised tent camps, this one in Izmit, during the first winter after the earthquake (left). Where space allowed, families added small additions to the tents for basic kitchen facilities and to offer a more private entrance (right).

Figure 5: The second stage, temporary housing, was built in large settlements on the outskirts of towns, often on land that was once agricultural (background in photo). Where possible, settlements were also built on small parcels of land within the cities.
The temporary housing programme included the provision of 40,621 housing units; 31,339 units provided by the government and 9,282 units by NGOs in 136 settlements throughout the earthquake-affected region, ranging in size from 20 units to 2000 units. Designs for the various government-built settlements were similar as they were procured through a centralised public tendering process (figure 8). Whereas NGO projects varied from rudimentary wood or paper shacks to slick factory produced units with separate bedrooms, kitchens and bathrooms (figures 9-13).

Even though the temporary units were small and offered very basic accommodation, families were grateful to have a place to call home after spending several months in tents or makeshift shelters. Residents affectionately referred to the temporary houses as ‘Geçici Saraylar’ or ‘temporary palaces’. Many families had to migrate to different towns to get a temporary house and often the locations were far from the city or their former home, nevertheless 95% of the houses were lived in. Neighbourly relations were important to the residents, and close ties with their new neighbours seemed to help them cope with the difficult situation. Additions were added to many of the temporary houses; mostly these were entranceways where people could take off their shoes and store belongings, or a private kitchen if this was not initially part of the design.
Figure 8: Temporary housing settlement built by government, with small additions added.

Figure 9: Small temporary housing settlements built in wood located in centre of village.

Figure 10: Paper-tube temporary houses designed by Shigeru Ban and built by the beneficiaries (left). Wood houses provided by a local NGO.

Figure 11: In the same settlements as pictured above, families have added additions, kitchen (left) and traditional Turkish sofa & small garden (left).
3 Reuse of temporary housing – ‘The Second Life’

Families remained in the temporary housing for two to three years, by which time the majority left to permanent housing. Four years after the earthquakes when this research was conducted, the outcome of temporary housing units could be categorised as follows (a) sale of the unit, in whole or in part (b) squatters occupying the unit (c) renting the units (d) refurbishing the units and storing them for future disasters (e) reusing the units as community buildings (f) demolishing the units and (g) using the unit as a core house for permanent housing (Johnson, 2006). The most interesting outcomes for reuse in terms of sustainability are renting, reuse as community buildings, and core house, which are discussed in more detail in the following section.

3.1 Rental housing

Temporary housing was a vital source of low cost housing for young families, families who were renters before the disaster and therefore were excluded from the permanent housing, or families that could not afford to purchase land. It was important that the settlements were located in close proximity to urban services and on land that had a flexible tenancy (figure 14). In the case study settlement of Kiremit Ocağı, a representative from the government was appointed as the property manager, however this could also be done privately or through community-led initiatives.

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20 Those who were homeowners before the disaster qualified for a permanent house and left the temporary housing. Those who were renters before the disaster did not qualify for most of the permanent housing programmes.
3.2 Reused as new community buildings

Temporary housing reused as community buildings was an outcome found in only one temporary housing project in Turkey. However, it was very successfully done and remains a model for future planning. The temporary housing units were dismantled and reconstructed on other land as community buildings, such as a sports centres and schools (Figure 15). The housing units were row-house style, built with sandwich panels on a steel frame and each building contained eight units, totalling a 200m² building that could be configured a number of different ways. However, investments were needed to pay for the costs of transport and construction.

3.3 Core house

While it was not part of any formal scheme, many affected families used their temporary house as a core house, which has been incrementally built up to become their permanent house (figures 16 & 17). Where issues of land tenure can be resolved, this model offers a good opportunity for the sustainable reuse of temporary housing.
4 Recommendations

Even in their ‘second life,’ after they are no longer needed as post-disaster temporary housing, units are a valuable resource for a recovering community. This is a fact that has been greatly underestimated after most disasters, where temporary housing becomes obsolete or worse, problematic. The most economically, socially and environmentally sustainable forms of reuse are: rental of temporary housing to low-income residents, reuse as new community buildings, and units acting as core for permanent housing. However, to take advantage of the second life of temporary housing, upfront strategic planning is needed that takes into account the possible outcomes of the units and matches these with the community needs.

Literature review


