5 Emergency and relief architecture. Motivation and guidelines for temporary shelters.

I tell you the truth, when you refused to help the least of these my brothers and sisters, you were refusing to help me

Gospel of Matthew (25:45) [1]

§ 5.1 Introduction

The deteriorating situation of the inhabitants of many countries, especially in the Near East and Africa, has resulted in a growing number of people being forced to leave their homes. UNHCR has reported that the number of forcibly displaced people increased to 65.6 million in the year 2016 [2] as a result of persecution, conflict, violence or human-rights violations. This was an increase of 6.1 million over the 2014 figure. It was also the highest number on record since the end of World War II. This number increased by 23.1 million in the five years since 2011 (see Fig. 5.1.).

However, in addition to the forcibly displaced people, there are many people who lost their homes because of natural disasters, and those who have become homeless for a variety of other reasons. In the year 2015, 364 natural disasters (not including epidemics and insect infestations) were recorded by EM-DAT (the International Disaster Database), which resulted in 22,773 deaths and 98.6 million affected people. [3] Another global problem is homelessness, i.e., a situation in which people or families cannot afford the kind of shelter that is considered adequate and meets the requirements for a minimal existence. This is a problem that occurs not only in poorer countries, but also in so-called developed countries. The OECD database on affordable housing states that 1,777,308 homeless people were reported in OECD countries in

2015. [4] As it is very hard to define or recognise a homeless person, this number may be 'off' by quite a significant margin.

Since 2015 there has been a large influx of people from the Near East and African countries in Europe. This influx has caused the largest migration crisis since World War II. By the end of 2016, Europe was hosting approximately 10.2 million of people of concern, including 6.6 million asylum seekers and refugees, 3 million internally displaced persons (including returnees) and more than 570,000 stateless people. [5] There is a lot of debate on the subject of refugees and immigrants and on the policies in place to help them. However, the political discussion on this is beyond the scope of this work, so the author will not comment on it. The focus of this part of the thesis is on potential architectural solutions for people who find themselves in a difficult housing situation, for whatever reason.

In this thesis, emergency and relief architecture is understood to refer to structures, buildings and infrastructure that support people in need, such as forcibly displaced people, victims of natural disasters or homeless people.

Each of the aforementioned groups requires a different approach with regard to safety, policy and medical or psychological support. Each group is also characterised by different factors. In order to understand the differences, so as to be able to provide the right type of support, it is important that we gain an insight into the characteristics of each group.

Both emergency shelters and temporary houses can be made out of paper components. Depending on the situation, they can be either temporary or semi-permanent shelters or buildings.

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§ 5.2 Victims of human-made and natural disaster, and the homeless

In a way, all the aforementioned groups (forcibly displaced people, victims of natural disasters and the homeless) living in developed countries can be called homeless. However, homelessness is a very broad and complex problem, in which many factors are at play, depending on the homeless person's cultural background, political situation, and most importantly, personal situation. Homelessness can be described as a situation in which a person, for whatever reason, lacks a proper place to stay. This definition does not indicate whether a person is in danger caused by others or by natural conditions, nor whether s/he was excluded by society and lives on the margin of society.

There are many different reasons why people become homeless. If we look at global housing problems, three key groups can be distinguished: people who were forced to leave their homes because of persecution or warfare, people who lost their homes due to natural disasters, and people who were excluded from society and so became homeless.

§ 5.2.1 Forcibly displaced people

In the year 2016, 22.5 million out of 65.6 million forcibly displaced people were refugees or in a refugee-like situation. Of these, 17.2 million were under UNHCR's mandate and 5.3 million were Palestinian refugees registered by UNWRA (the United Nations Relief and Works Agency for Palestine Refugees). In addition to the refugees, there were 40.3 million internally displaced persons (IDPs) and 2.8 million asylum seekers, who submitted 2 million applications for asylum (see Fig. 5.1). [2]

The aforementioned categories come with the following definitions:

- **A refugee** *is a person who as a result of events owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.* [6] The status of refugee described by the United Nations Convention and Protocol shall not apply to persons who are receiving protection and assistance from organs or agencies of the United Nations, other than the UNHCR. The term 'refugees' also includes those in a refugee-like situation.

- **Internally displaced persons** (IDP) *are people or groups of people who have been forced to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights, or natural or man-made disasters, and who have not crossed an international border. For the purposes of UNHCR's statistics, this population includes only conflict-generated IDPs to whom the Office extends protection and/or assistance. The IDP population also includes people in an IDP-like situation*. [2]

- **Asylum seekers** (with 'pending cases') *are individuals who have sought international protection and whose claims for refugee status have not yet been determined*. [2]

FIGURE 5.1 Trend of global displacement 1997-2016 [2]

All three groups require a different approach and different treatment.

Refugees

Refugees, being people who have been officially granted that status, should receive assistance and protection from UNHCR, non-governmental organisations and governments, which should bring them relief and possibly help them be assimilated into their new surroundings and society, thus helping them become self-sufficient. Refugees should possess the right to work, earn money, get an education, enjoy freedom of movement within the hosting country and receive public support, assistance, health care and social security in the country in which they are staying. Refugees who have unlawfully entered their host country shall have a right to apply for asylum. As the Convention and Protocol relating to the status of refugees states, The Contracting States shall as far as possible facilitate the assimilation of the refugees (art. 34), which may or may not end in their becoming naturalised citizens [6]. As far as housing is concerned, refugees shall possess the same rights as any alien lawfully staying in the territory of the contracting state. The protection of refugees has many aspects. These include safety from being returned to the dangers they have fled from; access to asylum procedures that are fair and efficient; and measures to ensure that their basic human rights are respected, so as to allow them to live in dignity and safety while helping them to find a longer-term solution. States bear the primary responsibility for this protection.

Internally displaced persons (IDP)

People who have been internally displaced due to conflict or violence retain possession of their rights in the same way they did before leaving their homes. Such people remain under the protection of their own state, even if the state was the reason for their displacement in the first place. UNHCR's mandate does not specifically cover IDPs. IDPs are among the most vulnerable people in the world. In less developed states IDPs have little support and few means to meet their short-term needs. IDPs flee from conflict regions to urban and rural areas. In urban areas they stay in private accommodation and the duty of assistance falls on their host community. Such situations may raise the tension between the IDPs and local communities which often already lack the resources required, resulting in new conflicts and further displacement. In rural and sub-urban areas IDPs stay in planned camps, self-settled camps or collective centres. Many IDPs who live in protracted displacement are in time left neglected because the media attention, donors and regional and international responders all dwindle. [7] In rural areas IDPs can stay in two types of camps: either organised and planned or spontaneous and self-settled.

Asylum seeker

An asylum seeker is a person who has not yet been granted 'refugee status' and therefore does not possess the same rights as a refugee, e.g. a residence permit. Asylum seekers are people who claim refugee status but whose final evaluation is still pending. In the years 2015 and 2016 there were 1.3 million asylum applications in the European Union each year. After a refugee arrives in a country, s/he is entitled to apply for asylum. The procedure behind this application involves several steps.

The asylum application process will be described below on the basis of Dutch legislation, which was broadly explained by Naisa Al Kailany (2016) in her Master's thesis entitled Refugee Influx. Using the Existing Buildings to House Asylum Seekers [8] as well as on the web page of the Dutch Ministry of General Affairs (see Fig. 5.2.). [9]

First, newly arrived refugees must apply for asylum in one of the asylum centres. For the next few days (minimum of six days) they will rest and prepare for their interview. During that time, they can stay at the Central Reception Centre (COL) or at the Application Centre at Schiphol Airport. During this period the Central Agency for the Reception of Asylum Seekers (COA) is responsible for the reception, supervision and departure (from the reception centre) of asylum seekers. The application/registration

procedure at the COL takes three days. During this procedure the asylum seeker has to complete a form, his fingerprints are taken and he is interviewed regarding his identity, family members, travel route and profession. After at least six days, the asylum seeker is relocated to the Process Reception Centre (POL), where s/he attends an interview, during which s/he explains his/her situation. After the interview, the Immigration and Naturalisation Service (IND) assesses the application. If the decision on the refugee's status requires more investigation and information, the asylum seeker is transferred to an Asylum Seekers' Centre, where s/he is subjected to further investigation. The aim is for applicants to leave the Centre within a year. However, as Al Kailany reports (2016), in 2011 more than half of the applicants stayed over a year. If the IND establishes that an asylum seeker needs protection, s/he will be given an asylum residence permit. The first permit is temporary and is granted for a term of five years. If the situation in the asylum seeker's home country improves during this period, his/her permit will not be extended. If the situation in his/her home country continues to be unsafe, the refugee will receive a permanent residence permit, which cannot be repealed.

Asylum seekers who do not require protection must return to their country of origin. They are transferred to a Return Centre, where they are allowed to stay for up to twelve weeks. Once the voluntary return period ends, they can stay at a location where their freedom is restricted. If a rejected asylum seeker does not leave the Netherlands, s/he runs the risk of becoming homeless. [8]

Depending on their country's current situation and their own capacities, asylum applicants will stay at an Asylum Seekers' Centre (AZC, i.e., a regular reception centre), Emergency Reception Centre (temporary reception facility in case of room shortage at asylum seekers' centres) or Crisis Reception Centre (generally a sport facility temporarily turned into a reception centre by a local government), where asylum seekers can stay for a very short period of time – generally, a maximum of 72 hours. The latter type of reception centre is not in use currently.

COA can establish both permanent and temporary Asylum Seekers' Centres. The most cost-efficient centres (AZCs) are centres housing 400-600 persons, which are built to last fifteen years. AZCs can be built on land owned by COA or on rented land. Temporary centres are often located in repurposed buildings, e.g. former prisons, retirement homes, monasteries, offices or barracks formerly used by the Ministry of Defence. [8] In such buildings, lightweight paper partitions can be used to divide the space temporarily into smaller apartments.

Asylum Seekers' Centres are established by the local authorities and tend to be vacant plots designated for dwellings or vacant buildings that have been adapted to house people. The inhabitants of asylum centres have rights as well as obligations. The

housing of asylum applicants is organised by COA. Applicants are divided in accordance with certain rules. Family members are placed together, and where possible, the applicants will be placed with people who have the same nationality. Asylum applicants are not obliged to stay at the reception centres. However, they have to register at a reception centre once a week. Children and teenagers aged between 5 and 16 are obliged to attend school, and adolescents aged between 16 and 18 are obliged to study for initial qualifications. [8]

When an application is granted, the applicant receives a temporary residence permit and may also receive temporary or permanent accommodation in the subsidised rental sector or in another repurposes vacated (office) building. Alternatively, s/he may be assigned to a mobile living unit, holiday home, etc. The local authorities decide where refugees will be resettled on the basis of the size of their family, country of origin, language spoken, education, work experience and medical condition.

Since the number of asylum seekers municipalities receive and the organisation of their accommodation is determined by the local authorities, they can vary and it is difficult to establish one solution or guideline for the AZC design. However, the best solution is a centre built for 400 to 600 people which is intended to be used for fifteen years. Smaller residences housing 50 or 100 people can also be established by the municipalities. There is a need for asylum seekers' centres for people whose applications are pending as well as for people who have been granted refugee status and temporary resident permits valid for five years.

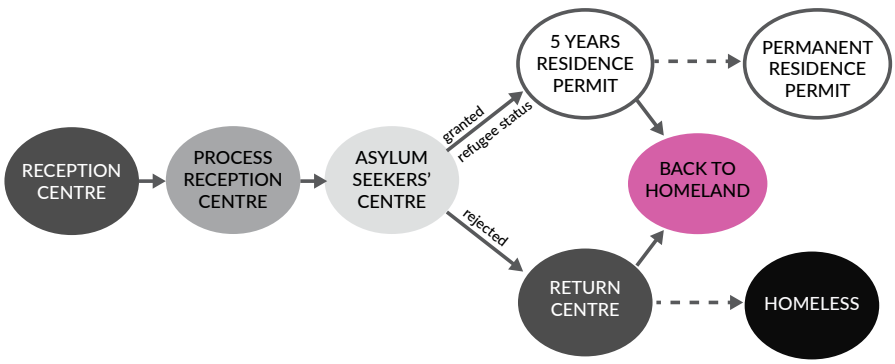


FIGURE 5.2 Asylum procedure in the Netherlands

The above describes the situation in the Netherlands, in northern Europe. The situation is quite different in the frontline EU member states – particularly in Italy and Greece,

which received 1,049,400 and 374,318 refugees in the years 2015 and 2016, respectively. [10] Refugees and migrants who arrived in the EU by illegally crossing borders have predominantly used two routes: the Eastern Mediterranean route (mainly from Turkey to Greece over land or by sea) and the Central Mediterranean route (mainly from Libya to Italy by sea). In the year 2015, over one million people came to Europe by sea, 3,770 of whom died in the Mediterranean Sea during the crossing. Although in 2016 the number of people arriving by sea decreased, the number of dead or missing people reached 4,899 by the end of 2016. The European Commission adopted the European Agenda on Migration in 2015 and established a Hotspot approach to the refugees arriving on the shores of Italy and Greece. The aim of the 'Hotspot' approach is for the EU agencies to provide comprehensive and targeted support to frontline member states that are faced with disproportionate migratory pressure at their external borders. [11, 12]

Hotspots are temporary relocation places in which asylum seekers are identified in the EU member state where they originally entered the EU. In order to share the burden between the various EU countries, the asylum seekers are then moved to another EU member state that bears responsibility for processing their applications. The newcomers are swiftly identified, fingerprinted, registered and subjected to further migration procedures (i.e. the asylum application), or alternatively, they are returned to their home countries in the event that they cannot produce sufficient evidence that they require protection. Operational support consists of registration and screening of illegal migrants, debriefing of incoming migrants, further investigations, legal support or assistance with the procedure by which asylum countries are returned to their countries of origin. In Italy migrants spend a few days at the hotspots before being transferred to reception centres, whereas in Greece the hotspots serve as both reception and detention centres where people stay for a longer period. [12]

Successive actions are undertaken in hotspots or during the transfers from boats or ports to the centres, such as medical screening, dividing asylum seekers into groups according to their nationalities, gender, vulnerabilities and medical needs, providing preliminary information, pre-identification, debriefing interviews, registration and further identification.

As the hotspot approach is still a fairly new procedure, its operation is fraught with difficulties. First of all, the poor conditions in the overcrowded reception centres tend to result in stress, frustration and poor hygiene. The procedures are often slow and protracted and the reception centres do not provide asylum seekers with sufficient information. As a study on the implementation of the hotspots in Italy and Greece (2016) suggests, several improvements should be instituted. For instance, the remaining hotspots should serve as open facilities where people cannot be

detained for longer than 48 hours (the constitutional limit) (in Italy), and the quality of life at reception centres where people stay longer must be improved (in Greece). Furthermore, conditions and asylum procedures at the reception centres must be monitored, reception centres must provide sufficient information, there must be more cultural mediation, and unaccompanied minors must be moved to safe places. [12]

The main reasons for the enormous number of forcibly displaced people were persecution, conflicts, generalised violence and human rights violations caused largely by the 'Arab Spring', which started in 2011. Furthermore, new or reignited conflicts in countries such as Ukraine, Burundi, Iraq, Libya, Niger and Nigeria, and unsolved conflicts in Afghanistan, the Central African Republic, the Democratic Republic of Congo, South Sudan and Yemen contributed to the global increase in forced displacement. More than half of the total number of refugees comes from three countries: Syria, Afghanistan and Somalia. It is important that we understand the cultural background of the forcibly displaced people in order to prepare conditions for them that will not cause conflicts within the group – conditions that the displaced people can adjust to.

Out of the 22.5 million refugees or persons in a refugee-like situation, 17.2 million were under UNHCR's mandate, 5.2 million were residing in Europe and 5.1 million were in Africa. The country that hosted the largest number of refugees was Turkey (2.9 million), followed by Pakistan (1.4 million), Lebanon (1.0 million), Iran, Ethiopia and Jordan. The ratio of refugees to population was the highest in Lebanon, where one in six people was a refugee, followed by Jordan and Nauru. It is clear that the countries that host the biggest number of refugees (13.9 million, i.e. 62%) are developing nations. Some of the least developed countries in the world provided asylum to 4.2 million refugees, i.e. 19% of the global total. Of the refugees from the five countries that produced the greatest number of refugees, most found safety in a neighbouring country. This indicates that most refugees are hosted by neighbouring and developing countries, and it underlines the importance of supporting the refugees in these states. The above data show not only the warm hearts of those who have the least, but also that major help for refugees should be directed to less developed and poorer countries that host refugees, preferably in such a way that they will be able to support their own economy while supporting others, for example by local production based on local resources.

It is estimated that 11.6 million refugees, i.e. 57% of those under UNHCR's mandate, were considered to be in a protracted displacement situation at the end of 2016. A 'protracted situation' here refers to people being in exile for five or more years. Out of the 11.6 million refugees, 4.1 million were in a situation lasting twenty years or longer. More than 2 million refugees from Afghanistan in Pakistan and the Islamic Republic of

Iran have been refugees for more than thirty years. There were 5.6 million refugees who had been in exile between five and nine years. The duration of refugees' stay in their place of refuge is calculated using a method that looks at the year of the first arrival of a group (more than 25,000 persons) of refugees of a certain nationality in a country providing asylum, then estimates the average duration of the stay of all refugees of that nationality. The average duration of some 32 protracted refugee situations is about 26 years. However, 23 out of these 32 situations have lasted for more than twenty years. This means new generations of people have been born and raised in refugee camps.

It also means that emergency shelters designed to be used only during a period of transition may end up being used for much longer than expected. Therefore, they should be designed for a matter of easy replacement or possible upgrade to a permanent state. They should not be allowed to be used longer than originally intended. It is important to note that each group of forcibly displaced persons encounters different conditions, depending on their legal situation, the relation to their adopted society they say in, rights, distance to place of origin, understanding of the culture, and many more factors which have a great impact on the design thinking for social innovation.

The number of refugees who fled to European countries in 2015 increased by 1.3 million, which was 41% more than in 2014, for a total of 4.4 million. By the end of 2016, there were 2.9 million refugees in Turkey and 2.3 million in other European countries.

However, not all the people who come to the European Union are refugees and asylum seekers. There are economic migrants among them, as well. Economic migrants are persons who leave their own country to work in another country. Economic migrants are not refugees. It is difficult to estimate the number of economic immigrants who come to Europe and ask for asylum, since proper policy and careful investigation are largely non-existent in Hotspots or other places where refugees first enter Europe. It is uncertain how many economic migrants there are among the genuine refugees. Frans Timmermans, the first Vice-President of the European Commission, said in January 2016 that 'more than half, 60%, of the people who are coming to the European Union are economic migrants and have no reason to ask for refugee status. In the main, they are people from Morocco and Tunisia who want to travel to Europe via Turkey.' He also said that 'it was important to send these "economic refugees" back home as quickly as possible 'to make sure that support for people fleeing war is not harmed'. [13]

During 2015, a mere 201,400 refugees returned to their countries of origin. This number increased to 552,200 in 2016.

The gender distribution of first-time asylum applicants in the European Union shows that more men than women have sought asylum. Among the younger age groups, males accounted for 55% of the total number of applicants in 2015. There was a greater degree of gender inequality for asylum applicants aged 14-17 or 18-34, in which groups around 80% of applicants were male, with this share dropping to two-thirds in the 35-64 age group. Across the EU-28, gender distribution was most balanced among asylum applicants aged 65 and over, where female applicants outnumbered male applicants in 2015, although this group was relatively small, accounting for just 0.6% of the total number of first-time applicants. [14]

By year-end 2016, half of the refugees in the world were children and teenagers aged 18 or less.

The European Union wants to contribute to a better reception of refugees in safe countries in troubled regions, for instance Turkey and Jordan, so that refugees can find protection there. In this way the government wants to prevent refugees from falling victim to people smugglers or risking their lives on dangerous boat crossings to Europe. [9]

The European Union announced in April 2016 humanitarian funding worth €83 million for emergency support for refugees in Greece. This support includes shelters, food, hygiene, child-friendly spaces, education, family reunification assistance and protection. [15]

Since the beginning of the crisis in 2011, the European Commission has provided a total of €455 million to assist refugees in Turkey, but Turkey's whole budget for refugee facilities is €3 billion. The annual EU aid budget in 2015 and 2016 was doubled and reached €10.1 billion, of which €3.9 billion is dedicated to funding aid inside the EU and €6.2 billion is dedicated to helping refugees and internally displaced persons (IDPs) outside the European Union, particularly in the countries and regions from which most of the refugees who have arrived in the EU originally hail: Syria, Iraq, Afghanistan, Pakistan, the Horn of Africa and the Sahel.

Movements of individuals and groups during a crisis are often rapid and unpredictable. Immediate first aid is crucial, yet all the statistical data that are collected are important because they help aid organisations provide the proper solution in the form of accommodation, needed supplies and restitution and emergency programmes. This socio-economic information includes the following: date and place of birth, language, occupation, marital status, religion, highest level of education, sex and age. This kind of statistical data is unavailable in many regions. The data collected by UNHCR by the end of 2016 shows that globally:

- 49% of the refugee population were women
- 51% were children
- 45% are described as being of working age, i.e. aged between 18 and 59
- People aged 60 years and over accounted for 4%

Emergency and relief solutions vary depending on the region, the refugees' place of origin andthe policies of the host country.

The data provided above are based on information released by governments, non-governmental organisations and the UNHCR. [2, 15]

§ 5.2.2 Victims of natural disasters

In addition to the most significant refugee crisis since the end of World War II, there are millions of people who have fallen victim to natural disasters.

As the authors of the World Disaster Report 2016 stated, *the best actions are people-centered, and [...] pre-disaster investments to reduce or even prevent crises are essential*. [16]

Although global poverty was reduced at the end of 2015, there were still 836 million people living in extreme poverty.

The last thirteen years have been full of enormous destructive events happening. At the end of 2004, the Boxing Day tsunami in Asia killed approximately 230,000 people across fourteen countries. The 2010 floods in Pakistan directly affected around 20 million people, and have continued to displace substantial numbers each year. In regard to drought, during 2011 and 2012, more than 12 million people in the Horn of Africa were severely affected in what has been called the worst drought in sixty years. The Ebola outbreak in West Africa, beginning in March 2014, led to 11,310 deaths across Liberia, Sierra Leone and Guinea (WHO, 2016). The Haiti earthquake of 2010 provided a terrifying 'perfect storm' of a major earthquake striking one of the poorest countries in the western hemisphere. The population loss, of between 100,000 and 316,000 (the uncertainty of the figure highlighting the precarious governance of the country), served to illustrate weaknesses in urban areas ill-prepared for such disasters, and an aid sector also unequipped for the urban challenge. Other large-scale disasters, such as Japan's 2011 Tohoku earthquake and tsunami and the Philippines'

2013 typhoon Haiyan, as well as numerous smaller disasters triggered by natural phenomena reinforce the increasing threat of such events. The number of disasters continues to rise, as a result of a combination of increased vulnerability (since more people live in dangerous places) and climate change.

During 2015, a total of 574 reported disasters, caused by earthquakes, floods, landslides and heat waves, killed almost 32,550 people, affected over 108 million people and caused USD 70.3 billion in damage.

The World Disaster Report 2016 also referred to a 50% global increase in carbon dioxide emissions since 1990, the continued destruction of rainforests, overexploitation of marine fish stocks and water scarcity that affects 40% of humanity, which is 'projected to increase'. The year of 2015 was described as the hottest year in history.

Armed conflict is not like an earthquake or a flood; it is entirely man-made and, by design, dismantles mechanisms for resilience. Conflict inflicts psychological trauma, separates families, divides communities, eradicates livelihoods, destroys infrastructure, diverts public funds from social services and leaves behind explosive remnants of war, all of which will undermine resilience long after the fighting has ended. Armed conflict is the flood that ebbs and flows for years or decades, eroding protective systems in the process. [16]

In most cases the help provided to victims of natural disasters takes place in the affected areas, so that the people involved are not forced to move elsewhere and abandon their connections and affiliations with other locals. Therefore, any architectural support provided to victims of natural disasters must focus on an immediate response, although the help provided can be long-lasting and become a new starting point for their lives.

§ 5.2.3 Homeless persons

Homelessness is a social phenomenon and psychological state occurring worldwide. In social terms, homelessness means exclusion. Homelessness involves exclusion from the physical area, i.e. a lack of home. It also involves exclusion from the social area (homeless people live on the margins of society and are detached from that society), and from the legal area (a person without a permanent resident permit cannot, for example, take part in elections or use the healthcare system

Homelessness as a psychological condition is a situation in which persons or families do not have a permanent place of residence that satisfies the minimum conditions in the cultural norms adopted by society. Homelessness in developed countries will be interpreted differently than homelessness in developing countries. For example, in India it is quite common to see people who spend the night on the street go to work the next morning. In such places, this type of homelessness does not necessarily result in social exclusion. In Europe homelessness is a state of loneliness. In most cases, homeless people live alone, without families, sometimes in smaller groups whose common goal is survival. Homelessness is more prevalent in urbanised areas, especially during the colder months of the year. In winter homeless people move to cities, where they have a better chance of finding places to spend the night, such as squats, public places (e.g. train stations) and care and support facilities for homeless people (nights shelters, short-stay shelters, etc.). During the spring and summer months, homeless people migrate from urban areas to rural areas to find seasonal jobs.

Homelessness is a very complex and multi-faceted phenomenon. It is surrounded by legends about the freedom of homeless people, which in fact means that a homeless person who calls himself or herself free is so far detached from society that s/he does not feel that s/he has anything in common with other people, in terms of rights and obligations.

A thorough understanding of the methods used to deal with homelessness is crucial to help us provide proper and responsible support. As homelessness is such a complex phenomenon, there are many different ways to define and explain it.

The Statistics Division of the United Nations' Department of Economic and Social Affairs has defined 'primary homelessness' as persons living without a shelter or living quarters and 'secondary homelessness' as persons with no place of usual residence. In some contexts, homelessness is understood as a lack of access to land as well as to a shelter. In rural Bangladesh, for example, homelessness is assessed on the basis of whether a household has a regularised plot of land as well as a roof overhead. Other definitions focus on being deprived of a certain minimum quality of housing. The Institute of Global Homelessness has proposed the following global definition: 'lacking access to minimally adequate housing', while listing various categories of living situations that fall within this general definition. [17]

One of the most apt definitions was proposed by Prof. Adam Przymenski from Poznan University of Economics in Poland.

'*Homelessness is a situation regarding people or families, who at a certain point of time do not have and cannot provide themselves with a shelter they might consider their*

own and which would fulfil minimum living conditions and would be recognised as a habitable space. [18]

This definition shows that what is regarded as homelessness in some cultures and countries may not be regarded as homelessness in other cultures and countries. A person living in substandard conditions in countries such as England, the Netherlands or Germany will be recognised as a homeless person, and local authorities will try to support him/her by providing him/her with a better place to live in. In India or Brazil, a person living in a similar situation might not be regarded a homeless person. It is very important to remember that homelessness involves more than just a physical situation.

FEANTSA (the European Federation of National Organisations Working with the Homeless) has developed a typology of homelessness and housing exclusion called ETHOS (European Typology of Homelessness and Housing Exclusion). According to ETHOS, there are two types of homelessness. In the strict sense of the word, people can be both roofless and homeless. However, there are also people in insecure or inadequate housing situations, who are homeless in a broader sense. The definition developed by FEANSTA assumes that there is no single definition of homelessness and the problem is so widespread that it is only possible to try to identify types of homeless persons and to find an the appropriate homelessness measures for type of homeless person and hence the right type of support.

The ETHOS typology begins with the conceptual understanding that there are three domains which constitute a 'home', the absence of which can be taken to delineate homelessness. Having a home can mean three things: having an adequate dwelling (or space) over which a person and his/her family can exercise exclusive possession (physical domain); being able to maintain privacy and enjoy relations (social domain) and having a legal title to occupation (legal domain). From this understanding, the following four concepts follow: Rooflessness, Houselessness, Insecure Housing and Inadequate Housing, all of which can be taken to indicate the absence of a home. ETHOS therefore classifies people who are homeless according to their living or 'home' situation. These conceptual categories are divided into thirteen operational categories that can be used for different policy purposes, such as mapping the problem of homelessness and developing, monitoring and evaluating policies.

		OPERATIONAL CATEGORY		LIVING SITUATION		GENERIC DEFINITION
CONCEPTUAL CATEGORY	ROOFLESS	1	People living rough	1.1	Public space or external space	People living in the streets or public spaces, without a shelter that can be defined as living quarters
		2	People in emergency accommodation	2.1	Night shelter	People with no usual place of residence who make use of overnight shelters or low-threshold shelters
	HOUSELESS	3	People in accommodation for the homeless	3.1	Homeless hostel	People whose period of stay is intended to be short term
				3.2	Temporary accommodation	
				3.3	Transitional supported accommodation	
		4	People in women's shelter	4.1	Women's shelter	Women accommodated due to experience of domestic violence, whose period of stay is intended to be short term
		5	People in accommodation for immigrants	5.1	Temporary accommodation / reception centre	Immigrants at reception centres or in short-term accommodation due to their immigrant status
				5.2	Migrant workers' accommodation	
		6	People due to be released from institutions	6.1	Penal institutions	No housing available prior to release
				6.2	Medical institutions	Stay longer than needed due to lack of housing
				6.3	Children's institutions / homes	No housing identified (e.g by 18th birthday)
		7	People receiving longer-term support (due to homelessness)	7.1	Residential care for older homeless people	Long-stay accommodation with care for formerly homeless people (normally more than one year)
				7.2	Supported accommodation for formerly homeless people	
CONCEPTUAL CATEGORY	INSECURE	8	People living in insecure accommodation	8.1	Temporarily with family/friends	Living in conventional housing that is not their usual place of residence due to lack of housing
				8.2	No legal (sub)tenancy	Occupation of dwelling with no legal tenancy; illegal occupation of a dwelling
				8.3	Illegal occupation of land	Occupation of land without legal rights to do so
		9	People living under threat of eviction	9.1	Legal orders enforced (rented)	Where orders for eviction are operative
				9.2	Re-possession orders (owned)	Where mortgage provider has legal order to repossess the house
		10	People living under threat of violence	10.1	Police-recorded incidents	Where police action is taken to ensure that victims of domestic violence have a safe play to stay
	INADEQUATE		People living in temporary / non-conventional structures	11.1	Mobile homes	Not intended as place of usual residence
				11.2	Non-conventional building	Makeshift shelter, shack or shanty
				11.3	Temporary structure	Semi-permanent structure, hut or cabin
		12	People living in unfit housing	12.1	Occupied dwellings unfit for habitation	Defined as unfit for habitation by national legislation or building regulations
		13	People living in extreme overcrowding conditions	13.1	Highest national norm of overcrowding	Defined as exceeding national density standard for floor-space or useable rooms

Note: 'Short stay' is defined as 'normally less than one year'; 'long stay' is defined as 'more than one year'.
This definition is compatible with Census definitions as recommended by the UNECE/EUROSTAT report (2006)

TABLE 5.1 ETHOS typology of homelessness

The ETHOS typology indicates that homelessness and social exclusion are not only related to people who do not have a dwelling, but also concern housing conditions and threats of eviction. The definition was phrased in order to reflect the fact that homelessness is not a static phenomenon and any definition of it needs to capture the process of housing exclusion and the factors underlining this process.

The process through which people become homeless and the reasons behind it are highly individualised. Therefore, it is impossible to present specific reasons as to why a particular person becomes homeless or remains so. However, certain psychological mechanisms are common, regardless of the person's cultural background or reason for being homeless. The author of this thesis drew up a diagram presenting the various stages of a descent into homelessness and return to society while conducting research on the homeless for his Master's thesis, entitled Architecture for the Excluded: The Structure of Homelessness in the City (see Fig. 5.3). [19] The diagram is based on first-world homelessness, as experienced in Europe and North America, which may be considerably different from the kinds of homelessness experienced in other civilisations and cultural regions. For example, during a discussion in a crisis centre in Jerusalem, Israel, a social worker stated to the author that in traditional societies such as the Jewish or Palestinian societies, the phenomenon of visible homelessness (i.e. roofless and houseless) does not exist. Israel did not have homeless people living rough until after the big influx of Jewish people from Russia in the 1990s. [20]

Like the descent into homelessness, the process by means of which people climb out of homelessness is highly individualised and strongly dependent on many personal factors, including the person's own life history, the reason why s/he became homeless and the way in which s/he became homeless.

The diagram is a simplified scheme that represents a person who has experienced physical, psychological and social homelessness but has managed to leave it all behind him/her.

During the first of the four stages depicted above, a person who has lost his/her home descends into so-called physical homelessness. This commonly occurs as a result of military action or due to a natural disaster, or possibly because of bankruptcy or the breakdown of a family. At this stage, the homelessness is physical, not yet psychological. It is generally linked to a tragedy in which a person has lost a home, without that person actually identifying as a homeless person. During the next stage, the person will start identifying as a homeless person. S/he will experience a sense of exclusion, loss and often loneliness. This is when the homeless person will genuinely be excluded, and will suffer psychological and physical degradation. S/he may now wish to escape from consciousness by taking something that may relieve the pain and the

sense of seclusion, such as alcohol, drugs and/or medications. It is at this stage that a homeless person will often become an addict, unless s/he suffered from addiction before.

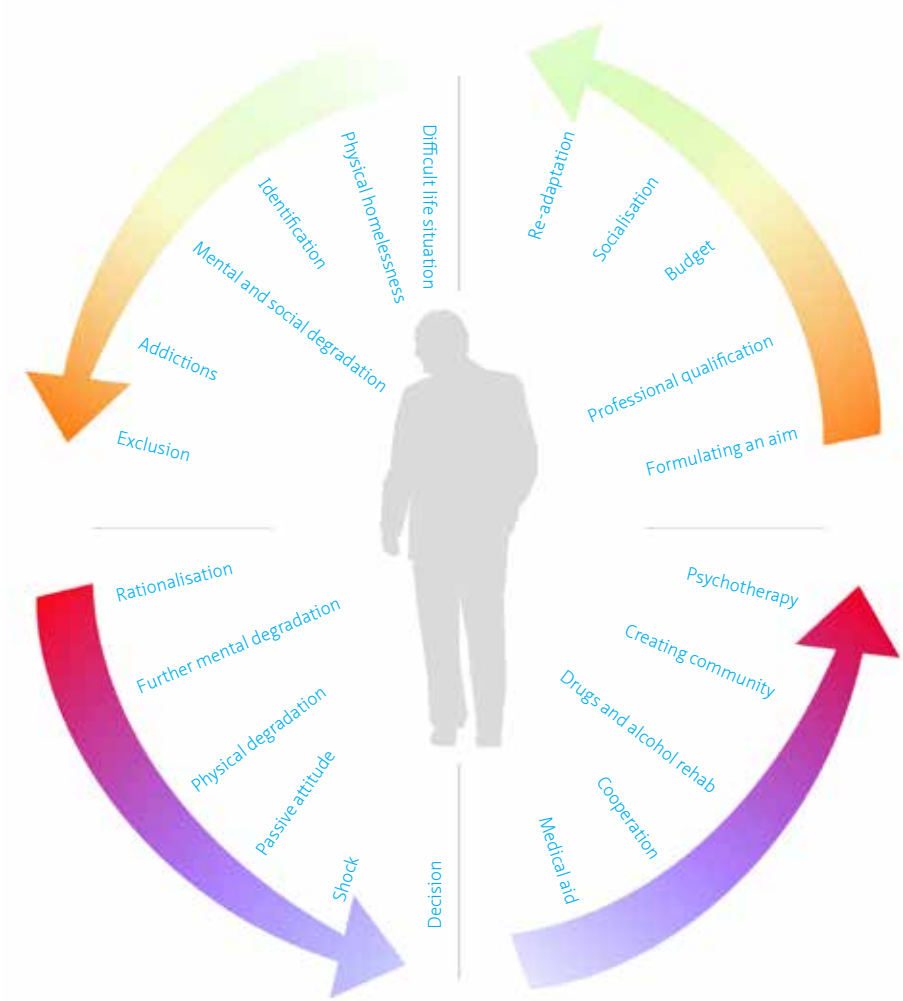


FIGURE 5.3 Theoretical diagram of homelessness

A very important point in the descent into homelessness is so-called 'rationalisation'. This is a psychological mechanism that allows one to accept a bad situation. It is a defence mechanism that makes the situation in which a person finds himself/herself more bearable. When asked a question concerning his/her situation, a homeless person will often reply that s/he may not have his/her own accommodation or resources, but s/he is a free person. Thus is born the awful myth of the homeless person who is supposedly free and independent and homeless by choice. However, it pays to remember the reasons why this person became homeless in the first place. If we do so, we will find that generally speaking, the reasons for a person's homelessness were independent of that particular person, and that this person did not begin to accept homelessness or see its positive aspects until after having been homeless for some time. Rationalisation is dangerous because it reduces a person's willingness to return to 'normal' life, re-socialise and break away from his/her homelessness.

The danger inherent in this stage is that the person will replace the state of being temporarily homeless with the state of permanent homelessness. Once a homeless person starts identifying as a homeless person and starts rationalising his/her position, passivity and indifference will creep in. The result of such a state is learned helplessness, a condition in which the homeless person cannot get out of his/her situation on his/her own, and if s/he gets some temporary relief, e.g. a communal apartment, s/he will not be able to manage it properly. As a result, s/he may lose the accommodation and suffer further degradation.

Deepening homelessness gradually turns into a state of permanent homelessness. It is followed by further psychological degradation and exclusion. Generally, it results in the homeless person's severing his/her relations with his/her family and friends and with people who knew the person before s/he began identifying as a homeless person. Intoxicants, addiction and a lack of personal hygiene due to the person's homelessness will result in the homeless person's becoming paralysed with inertia. Living from hand to mouth, s/he will remain in some kind of haze, in which s/he will feel paradoxically safe because nobody demands anything of him/her. Since s/he does not have any rights or responsibilities, s/he is not far from the truth when s/he says that s/he is a free person. Generally, this state of permanent homelessness lasts until an event occurs that has a considerable impact on the homeless person's life and attitude. It can be a traumatic event or some kind of disease or hypothermia. Often, the turning point in the process of getting out of homelessness is a situation in which a homeless person sustains an injury and, not given a choice, has to ask for help, at the same time giving in to the conditions of hospitalisation or to the rules of a night shelter or a hostel.

The first stage in helping a homeless person who has decided to get out of his/her situation is the provision of medical assistance. Another essential element is a

homeless person's willingness to cooperate with social workers, undergo rehab and adapt to the rules of certain social welfare centres. The person's return to the society should begin in small local groups, for example among the occupants of a hostel. Meeting people and sharing duties have a therapeutic effect. It is also essential that homeless people be provided with counselling, during which they will have the opportunity to make rational decisions about themselves and look at their lives with a psychologist's help. This will enable him/her to break away from the aforementioned haze and look beyond it, with a view to returning to society and a so-called 'normal life'. It is vital at this stage that the homeless person have a goal. Goals may include getting a communal apartment, finding a job, helping one's family and/or renewing contact with one's family.

While working on himself/herself in a so-called 'individual programme', the homeless person will learn a trade that will allow him/her to support himself/herself. S/he will learn how to manage his/her finances, time and the like. The job opportunities may occur and give the homeless person the idea that s/he will be able to live independently. Living in a shelter, having gainful employment, not being too financially dependent on others and being able to stay sober all go a long way to helping a homeless person achieve social re-adjustment. The last stage of a successful climb out of homelessness is getting one's own private housing and achieving financial independence.

Needless to say, the diagram showing the steps involved in a descent into and climb out of homelessness is a simplified one. It shows the difficulties and dangers inherent in the slide into homelessness and the tribulations of getting out of this state. Each individual homeless story has his/her own story, and each case will develop in its own way. The various stages or steps noted in the diagram provide a better understanding of what goes on in a person who is sliding into homelessness or a person who is trying to break away from homelessness.

The diagram should be perceived as a means to help one describe the situation and condition of a homeless person, or as a depiction of a process that can be supported by 'soft activities' (psychology, medical or social help) or by 'hardware', such as architecture. For people who take care of people's physical spaces, such as architects, urbanists, planners and politicians, important elements of the above diagram are the crucial points in the process of getting into and out of homelessness such as physical homelessness, rationalization and permanent homelessnes or decision. One of these crucial points is the loss of home – the moment at which a person does not yet regard himself/herself as homeless, but has been deprived of a roof over his/her head. At this stage action should be undertaken as quickly as possible in order to provide such people with some basic conditions that suit their expectations, depending on

where they live and what kind of habits they have. Neglecting this stage can result in a deepening of the state of homelessness, with all the associated consequences, which are often irreversible for a human being and costly for society from a sociological and material point of view. Therefore, it is crucial that people who have lost their homes or the places where they live be provided with help at once, so as to prevent them from identifying as homeless people. This may be very difficult, especially in emergency situations such as natural disasters, where in addition to physical losses there is trauma, fear, uncertainty and loss of loved ones. From an architectural point of view, which is mainly concerned with the hardware part of the support to be provided, a safe and relatively comfortable place to live is essential.

There is another important moment in the strategies against homelessness – another turning point, namely the moment at which a homeless person decides to work on himself/herself and tries to break free from homelessness by getting medical care and psychotherapy, getting an education, adapting to having a job, etc. According to the continuum- of-care methodology, which is explained below, these steps should be accompanied by an improvement in the person's physical environment in order to enhance this process. [20]

In western countries, especially in the USA, Australia, Canada, Finland and France, a new system of combatting homelessness called 'Housing First' has become popular in recent years. The idea was conceived in New York in the 2000s and consists in providing homeless persons with apartments as a first step towards re-adjustment and getting out of homelessness. The 'Housing First' method is based on the idea that getting a communal apartment that comes with social services will give a homeless person a stronger base to fight against homelessness and exclusion (see Fig.5.4). A different approach to homelessness is presented in a method called 'continuum of care', which is based on the idea that a homeless person must pass through several stages in order to break free from homelessness. The Continuum of Care programme distinguishes three main stages: prevention, intervention and integration (see Fig. 5.5). In the preventive stage, institutions dealing with the fight against homelessness must prevent people who are at risk from falling into homelessness from doing so by providing them with temporary shelters and financial and psychological support. Temporary apartments for the homeless are an essential part of this stage. The intervention stage includes things such as helping people who sleep rough, placing them in night shelters or hostels with public assistance. Finally, the integration stage consists in stimulating homeless persons' fight against their situation, getting out of homelessness, getting a place in a training apartment, and, ultimately, living in a communal apartment. The two crossing lines on the graph refer to the turning points in the previously described scheme. The first turning point is the moment at which the person becomes homeless,

and the second is the moment at which the support given by others or the homeless person's own efforts help him/her break free from his/her homelessness. [20]

FIGURE 5.4 Housing First scheme

FIGURE 5.5 Continuum-of-care scheme

The type of homelessness described above concerns the situation that can be found in the western world, i.e. Europe and North America. However, homelessness is a very broad notion and also includes two other categories: forcibly displaced people and victims of natural disasters.

It is almost impossible to estimate the number of homeless people as some types of homelessness are immeasurable.

The database of OECD countries shows that in 2015 there were 1,777,308 homeless people in OECD countries, including 549,928 homeless people in America. [4] However, these numbers may not concern the broader meaning of homelessness only the persons in assisted accommodations or living rough in urban areas. For example, the official number of homeless people in Poland was 36,161. But this number concerns only those people who receive care from social institutions, while there were another approx. 10,000 people who did not use the care facilities. In the broad sense

of the word 'homelessness', the number of homeless people in Poland was as high as 300,000-400,000.

The Homeless World Cup Foundation estimates that there were 100 million homeless people in 2005, as well as 1.6 billion people without adequate housing. [21]

Even though the homelessness described above concerns the population of the western world, the mechanisms can be similar in other parts of the world. Moreover, the refugees and immigrants who have come to Europe, will not be granted refugee status and therefore will be excluded from the legal, social and physical domains will likely become homeless (see Fig. 5.6.). It is important to take this consideration into account as the current influx of refugees may result in a growing number of homeless people in the next few years.

FIGURE 5.6 Homeless people sleeping rough in Brussels, 2017

§ 5.3 Design guide for emergency architecture

At present the European Union is dealing with the problem of a growing number of refugees who have fled countries engaged in wars or conflicts. When these refugees first arrive in Europe, be it by boat or by some other route, they are taken to Hotspots or reception centres, where they are registered and identified, and where they are checked for possible links with terrorist organisations. After that, they receive support designed to help them be assimilated into European culture. This support involves lessons in the local language, education, professionalisation and help with national or international legal procedures. Such activities are generally provided at specially designed places where asylum seekers and refugees can live in some comfort and safety, and where they receive support from governmental organisations and aid organisations. It is vital that this process be controlled, and that people are registered at every step along the way. If the process is not controlled, unregistered and unknown people will sneak into the European Union and will be sentenced for illegal residence and taking part in the black economy. Registration and checks are also important to ensure that EU citizens feel safe in their own countries. Integration policies have to be well thought out and cautious to prevent acts of aggression directed at refugees.

The best way to solve the problem is obviously to bring stability to war-torn countries, but in the meantime, hundreds of thousands of refugees need to find a secure place to survive. Developing regions hosted 86% (13.9 million people) of the world's refugees under UNHCR's mandate. This was the highest figure in more than two decades. The least developed countries provided asylum to 4.2 million refugees, i.e. about 28 percent of the global total.

The refugee camps organised by the Red Cross, UNHCR and other aid organisations are places where refugees can find safe place to live. These camps, built in the forcibly displaced peoples' home countries or in a country to which they have fled, must follow certain spatial and organisational guidelines.

The beliefs of the various humanitarian agencies are based on three shared principles: the right to a life with dignity, the right to protection and security, and the right to receive humanitarian assistance. These principles are expressed through the practical actions undertaken by humanitarian organisations. One of these is to provide support and assistance to forcibly displaced people and victims of natural disasters. Everyone has a right to adequate housing, which means: [22]

- Sufficient space and protection from cold, damp, heat, rain, wind or other threats to health, including structural hazards and disease vectors
- The availability of services, facilities, materials and infrastructure
- Affordability, habitability, accessibility, location and cultural appropriateness
- Sustainable access to natural and common resources, drinking water, energy, sanitation and washing facilities, refuse disposal, site drainage and emergency services
- The appropriate settlements and housing with provided safe access to services such as health care, education, childcare, etc.
- Appropriate diversity and cultural identity of housing.

In order to provide adequate housing, organisations must meet these minimum standards.

With regard to the location of the forcibly displaced people, three main groups can be distinguished: urban locations (60%), rural locations, and mixed/unknown locations. It is vital that aid organisations have reliable data on where the refugees are to improve the allocation of resources, the policies and design programmes.

Six main types of accommodation can be distinguished (see Fig. 5.7):

- **Planned/managed camp**
- **Self-settled camp**
- **Collective centre**
- **Reception transit camps**
- **Individual accommodation** (private), which amounted to 67% at the end of 2015
- **Various/unknown**, which by the end of 2015 equalled 2.8 million people under UNHCR's mandate (17%).
  Each of the aforementioned types of accommodation can be location in an urban area or a rural one. In rural locations, most of refugees lived in planned/managed camps in

2016, and only few percent in private accommodation, while in urban locations, 88% of refugees lived in private accommodation and 3.3% in planned camps.

TYPE OF ACCOMODATION	NO. OF REFUGEES			DISTRIBUTION (%)			% URBAN			% WOMEN			% CHILDREN		
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Planned/ managed camps	3,512,500	3,390,900	4,011,000	29.3	25.4	28.6	7.0	1.4	3.3	50.5	51.4	51.4	55.7	57.6	58.6
Self-settled camps	487,500	518,600	525,200	4.1	3.9	3.7	0.4	7.6	7.2	52.9	53.3	52.4	56.3	57.1	56.5
Collective center	302,00	301,900	320,100	2.5	2.3	2.3	95.3	87.1	100	47.8	45.0	18.6	54.4	46.8	17.0
Individual accomodation (private)	7,578,400	8,99,200	8,877,100	63.2	67.0	63.3	87.3	87.8	87.8	47.9	47.5	48.3	47.0	48.2	49.2
Reception/ transit camp	111,700	197,600	8,877,100	0.9	1.5	2.0	15.1	10.7	9.6	51.5	51.3	62.5	51.0	54.3	35.7
Sub-total	11,992,100	13,358,200	14,015,200	100	100	100									
Unknown	3,393,200	2,763,200	3,172,200												
Grand total	14,385,300	16,121,400	17,187,500												

TABLE 5.2 Accommodation of refugees 2014-2016

In general, accommodation in emergency situations comes in the following forms:

- **Dispersed settlements or host families**
- **Mass shelters**
- **Camps (self-settled and planned)**

Dispersed settlements and host families are a type of self-supporting accommodation often occur near by previous accommodation. The homeless person either share the accommodation, or set up a temporary home and share utilities like water, sanitation, cooking facilities, etc. This type of accommodation may occur in both rural and urban areas, and is often found with family members or people of the same ethnic background. The positive aspects of this type of accommodation are quick implementation, a limited need for administrative support, and low costs. Dispersed accommodation fosters self-help and independence and has less of an impact on the local environment than camps. On the other hand, the burden on the hosting families can be significant, both financially and emotionally. Furthermore, it can be hard to tell the homeless persons apart from the host population, especially when registration is

needed, and it may be hard to provide a dispersed population with protection, nutrition and health care. Lastly, shelters and other forms of assistance are needed by the host population and the homeless. However, the host communities may receive UNHCR support.

Mass shelters are public buildings and community facilities. In this type of accommodation, homeless persons are accommodated in pre-existing facilities such as schools, barracks, hostels, gymnasiums or warehouses. Usually this type of accommodation is found in urban areas and it is considered transit accommodation, i.e. temporary accommodation. Such buildings can be made available immediately and services such as water and sanitation are generally available. However, such types of accommodation may quickly become overcrowded and/or be damaged. Moreover, the buildings cannot be used for their original purposes by the local community while the refugees are staying in them, and the people staying in them lack privacy.

Spontaneous, self-settled camps should be avoided to the maximum extent possible. Since they are formed without adequate planning, there is a risk of their becoming an unfriendly environment with overly costly services, a lack of supplies, inadequate shelter, overcrowding, and possibly conflicts with the local community. For this reason, such camps may have to be re-designed and relocated. However, sometimes a self-settled camp may be the only option in an emergency situation.

Planned camps are a type of accommodation built for a particular purpose, where sufficient services can be provided to a large population in a centralised manner. The support provided by volunteers in planned camps is more effective and more easily organised and specifically targeted at homeless persons. Camps pose certain threats, such as a high risk of the spread of diseases and health problems, especially in highly populated camps. Furthermore, camps may cause environmental damage. Lastly, registration may be problematic in large camps, and it may be hard to distinguish between actual inhabitants and other persons, who can often stay in camps without being noticed.

It is essential for the safety and well-being of homeless that the site of the camp be well chosen, the camp is well planned and the shelters be built in accordance with specific criteria. Decisions about site selection, planning and what type of shelter to provide should be made by means of an integrated approach incorporating the advice of a specialist and the views of future inhabitants.

§ 5.3.1 Site selection

The site should be selected, and the camp planned out, prior to the arrival of homeless persons, although allowance should be made for changes at a later date. Unforeseen events may require that a site planned beforehand be adapted to the new circumstances. The choice of a site should take into account criteria related to the potential beneficiaries (number, types or categories), location (distance from major towns, distance from the border, security and protection, local health and other risks, distance from protected environmental areas), basic characteristics (area, possibility of expansion, land use and rights, topography, elevation, soil condition, water availability, drainage, chances of installing sanitation facilities and water supply, climatic conditions, vegetation and other environmental conditions), complementary and supportive services (nearby villages and communities, accessibility, proximity to health and education services, distance to electricity source, proximity to economic centres, agriculture, possibility of harvesting the woods for wood to be used in construction or as fuel).

The most important ones of these criteria are the following:

- Water supply – the availability of an adequate amount of water is the most important criterion. It is also the most problematic one.

- Size of the site – the recommended minimum area of the camp is **45m² per person**. The minimum area **should not be smaller than 30m² per person, excluding agricultural land.** The area per person includes all communal services and services such as roads, paths, education, sanitation, water, storage, markets, etc.

- The number of people in a camp should not exceed 20,000. Smaller camps holding just 500-2000 persons are advisable. The camps should have the potential for expansion. The population of a camp can grow as fast as 3-4 % per year due to the ratio of deaths to births.

- Land use and rights – it is important to identify who owns the land, as UNHCR does not buy or rent land. Camps must be located on public land provided by the government. The people living in the camp must be granted the right to use the land and exploit it by harvesting wood, breeding animals and cultivating land.

- Topography, drainage and soil conditions. The site should be located above flood-prone areas. The optimal slope of the site is between 1 and 5%. The slope should

not be steeper than 10% due to the need for levelling and costly additional work. However, completely flat sites may pose a problem in terms of drainage of wastewater and rainwater. It is important from a sanitary point of view that water be absorbed by soil. Pit latrines may or may not be able to be used, depending on the type of soil. The groundwater level should be at least 3m below the surface of the site.

- Accessibility – the site must be accessible and located at a reasonable distance from sources of supplies such as food, cooking utensils, fuel and materials used for shelters.

- Climatic conditions, local health and other risks – the chosen site should be safe and free of major environmental health hazards and natural disasters. Strong winds may damage the shelters, but a slight breeze is advisable for better camp ventilation. It is vital that year-round weather and temperatures be considered.

- Vegetation – damage to the topsoil during the pre-operational work on the site must be avoided at all costs. The quality of the soil, and cultivation potential is an important matter. The site should be checked for the availability of vegetation and biomass for heating purposes. Camps should not be located near ecologically and environmentally protected areas.

The site should be chosen with the assistance of experts from local governments, UNHCR's Technical Support Section, NGOs, local industries, engineering faculties and professional organisations. Important fields that may require expertise include hydrology, surveying, physical planning, engineering, public health, environment and social anthropology. The latter is important in order to create the kind of conditions in the camp that the refugees are used to in their place of origin.

Even if there are not enough resources for services such as education, recreation, playgrounds and other social infrastructure and communal areas when construction of the camp first begins, space must be reserved for such services, as they have a major influence on the human environment.

§ 5.4 Site planning

Site planning should be guided by the principle of a decentralised community-based approach, where families, communities or other social groups constitute the spatial arrangement. This means that planners should use the 'bottom-up' approach where the needs and characteristics of the families are considered first, and where the arrangements made reflect the wishes of the community. Future users of the site should be involved in the site planning process. Each community should possess its own services, such as latrines, showers, water supply, cooking areas, rubbish collection and places where clothes can be washed (see Fig.5.7). This enhances ownership and therefore leads to better use and maintenance of such facilities. Individual communities should not have closed-off sections. Camp sections should be kept open so as to allow better control and greater interaction with other communities.

Camps should be organised as follows:

MODULE	CONSISTING OF	APPROX. NUMBER OF PERSONS
1 family	1 family	4 -10 persons
1 community	16 families	80- 100 persons
1 block	16 communities	1,250 persons
1 sector	4 blocks	5,000 persons
1 site (camp module)	4 sectors	20,000 persons

TABLE 5.3 Modules of the camp

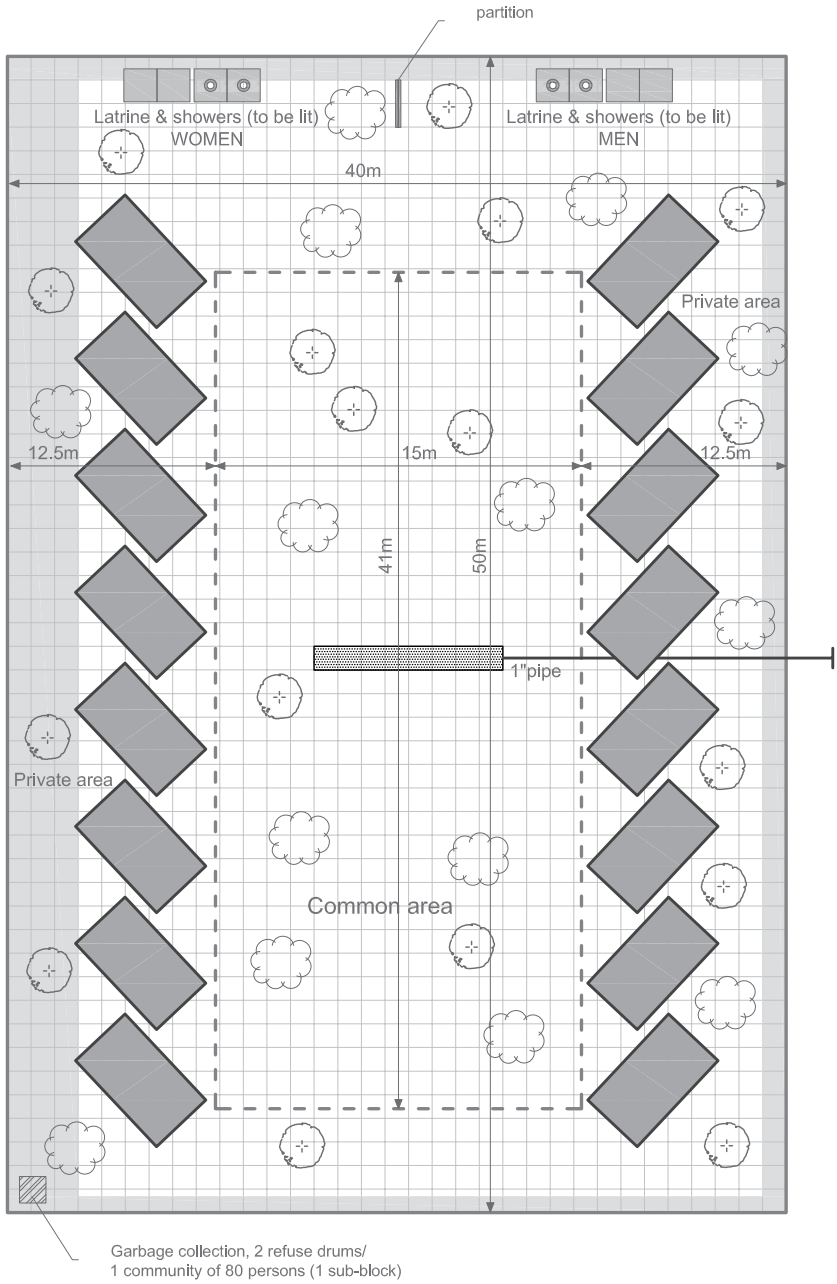


FIGURE 5.7 Sub-block – community area in a refugee camp plan

§ 5.4.1 Master plan

The master plan of a camp should consider both natural and planned features, such as rivers, hills, flood plains, swamps, rocky patches, existing buildings, roads, bridges, farmland, electrical power grids, water pipelines, drainage systems, environmental sanitation plan, water distribution, utilities, lighting, administration areas, educational and health facilities, warehouses, distribution centres, nutrition centres, community centres, playgrounds, sport facilities, religious places, markets and recreation areas, fire prevention breaks and agricultural plots. The master plan should be prepared in accordance with the following standards:

1 WATER TAP	PER	1 COMMUNITY (80-100 PERSONS)
1 latrine	Per	1 family (4-10 persons)
1 health centre	Per	1 site (20,000 persons)
1 referral hospital	Per	10 sites (200,000 persons)
1 school	Per	1 sector (5,000 persons)
4 distribution points	Per	1 site (20,000 persons)
1 market	Per	1 site (20,000 persons)
1 nutrition centre	Per	1 site (20,000 persons)
2 refuse drums	per	1 community (80-100 persons)

TABLE 5.4 Standards for camp's masterplan

The layout described in the master plan depends on the conditions encountered in the physical terrain as well as on the size of the camp, its connection to available infrastructure and local roads, distance from the nearest urbanised area and surroundings. Basically, camps are designed on a rigid grid, in which streets cross each other at right angles, thus dividing the camp into sectors and blocks. However, other arrangements are possible (see Fig. 5.8). [24]

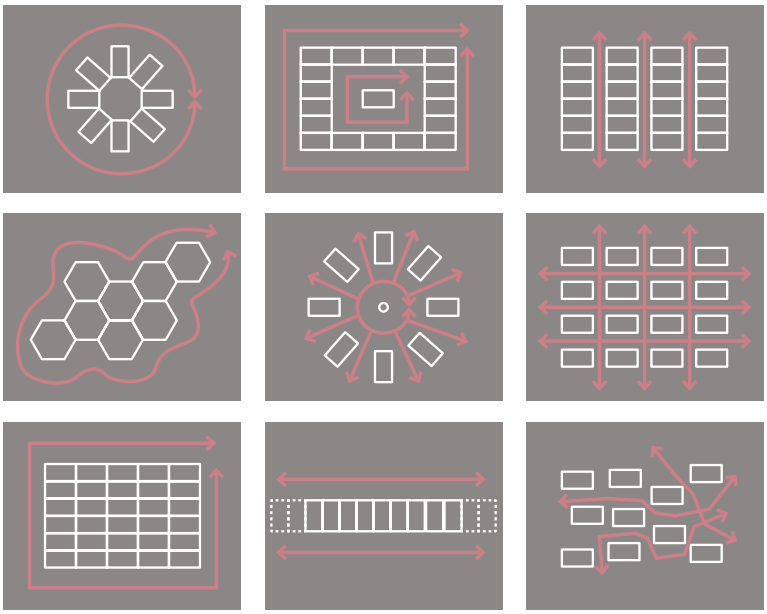


FIGURE 5.8 Types of emergency camps

§ 5.4.2 Modular planning

As mentioned before, planners should take the bottom-up approach, which means that the family must be the starting point for the spatial planning of the camp. The first thing that should be considered is the needs of a single family: distance to supplies (water, latrines), relationship with other community members, housing traditions and the spatial arrangements of the shelters. Then a layout should be drawn up for a community, and after that the larger issue of the overall layout of the camp can be considered. This way of modular planning allows camp organisers to consider the needs and demands of smaller groups and adjust their planning and the location of the individual communities in such a way that individuals and families will be able to create communities and support each other.

The layout of the camp should enhance neighbourly relations and community interaction. Furthermore, it should provide clearly identified functional areas, such as supplies (latrines and water supply), markets and both public and semi-public places.

The layout should encourage people to look after places and services, so that they will be better maintained. Rigid grid layouts often prevent functional areas in a camp from being properly arranged. However, this type of layout is often used because of its simplicity and the speed with which it can be implemented. The layout of the site should be based on such factors as family structures, cultural backgrounds and social groups.

It is very important that the environmental impact of the camp and the ecological burdens that can be created in time be thoroughly considered. Shelters must be suited to the local climate. They should not be constructed with local wood, so as to protect the region's environment. The ecological burden of a camp may also be reduced by means of proper insulation and passive energy systems.

§ 5.4.3 Services and infrastructure

As a source of water is a major requirement for a camp location, latrines and sanitation points dictate the layout of the site. A high population density and poor sanitation can easily cause health problems, including epidemics. Uncontrolled defecation and public latrines should be avoided. However, if public latrines are the only possible option, they should be positioned in such a way that they will be accessible from the road and will have enough space around for maintenance. Ideally, each latrine will be dedicated to one family (four to ten persons), as this will encourage people to keep their latrines clean, which is good for long-term hygiene. The ideal location for a latrine is on the family plot, but as far as possible from the shelter. If this solution is not feasible, the latrine should be installed in a community area that is home to a few families or groups. Ideally, it will not serve more than twenty persons. The water supply point should be located no more than 100 metres from the shelter. The layout of the camp should feature a water distribution grid with water pipes below the ground (40-60cm below the surface, or 60-90cm if the camp is located in a country with low temperatures). If a water distribution point serves a full community (80-100 persons), far less water will be wasted. Grey water can be used for the irrigation of gardens.

A site should be equipped with a network of roads and pathways. The main roads should be built above flood level and should be accessible all year round. For safety reasons, a distance of 5-7 metres should be observed between the edge of the main road and the border of the plots.

In every 300m of built-up area there should be an empty space 30m wide that serves as a firebreak. Such firebreaks should serve as divisions between blocks (16 communities, 1,250 persons). The empty spaces can be used for recreational purposes or for cultivation of fruit and vegetables. The distance between separate buildings should prevent a collapsing or burning building from touching its neighbour. The distance between the buildings should equal twice their height. If highly flammable building materials are used, the distance between the buildings should be three or four times their height. The direction of the prevailing wind plays an important role in fires, so this should be taken into account during the camp planning.

The administrative and communal buildings should be located in places where they will serve the greatest number of people. They should be designed in a flexible and universal way that will allow them to be used to host different activities and functions at different times. They may provide centralised facilities and services to larger groups, such as site administration, initial registration and health screening, health care, food and water supply, education, storage, therapy, market places, community centres, etc. Other services and facilities should be more decentralised and serve smaller groups: water points, latrines, bathing and washing areas, rubbish collection, supplementary feeding centres, education facilities, commodity distribution centres, etc. Depending on the size of the camp, the centralised services building can be located at the heart of the camp or at the entrance to the site.

§ 5.4.4 Camps' spatial needs

Minimum standards are evaluated by a professional and are based on UNHCR's Emergency Handbook [23] and Humanitarian Charter and Minimum Standards in Disaster Response Sphere. [22] However, often the camps get overcrowded in time. As a result, the inhabitants lose their dignity and the space they require to pursue their livelihoods. As mentioned before, many refugee camps are full of inhabitants who have been there for a long time, often for more than twenty years. The average lifespan of a refugee camp is close to seven years. Therefore, when planning a camp, the long-term perspective has to be taken into account. The annual population growth rate in camps is 3-4%, which means that in a camp of 20,000 displaced people, the population will grow to 29,605 within nine years, which is just two years more than the average lifespan of a camp. If the average land area per person in the camp follows the guideline of 45m^2 per person, by the end of the ninth year this area per person will have been reduced to 32m^2, which is below the acceptable minimum. Moreover, in the guidelines no area is assigned to workshops, home-based enterprises, granaries or tool storage,

nor are there any numeric guidelines for non-residential buildings such as schools, clinics, warehouses, administration offices or community centres. Jim Kennedy (2005) suggests that camps be planned as a hierarchy of different interlocking spaces, of which some are absolutely private, some absolutely public, and many are a combination of the two. [25] Therefore, the physical structures should help form a flexible and adjustable plan, which will follow the growing population and changing needs of the residents. Kennedy states that an extra 100-150% land is necessary, not for the initial buildings but for low-intensity use, perhaps for several years. [25]

If we look at the duration of the period during which people who have lost their houses (particularly refugees) stay in refugee camps, it will become clear that we should regard them not as refugee camps but rather as refugee cities. As Kilian Kleinschmidt, one of the world's leading authorities on humanitarian aid, says: *In the Middle East, we were building camps: storage facilities for people. But the refugees were building a city. These are the cities of tomorrow. The average stay today in a camp is 17 years. That's a generation. Let's look at these places as cities*. [26]

The organisers of the camps should take into account the way people will lead their life in the camps in the future with a normal daily routine. This problem was addressed in the thesis with which Twana Gul graduated from TU Delft's Faculty of Architecture and the Built Environment. Gul, who visited several refugee camps in northern Syria, proposes in his thesis that camps be treated as cities, with all that entails:

Basically, the bare camps are not performing as emergency camps anymore, but more as cities. When time passes by – for instance, one to two years – people try to pick up their lives again and try to survive the poor conditions with the use of their occupation. Let's say, one of the refugees was in "his previous life" a barber in the city centre of Singal, after his settlement in the camp he becomes conscious of his stay. He will not return in the coming weeks, but probably after six months, a year or two. Therefore the formal barber would like to establish a barbershop in the camp to enhance the conditions for his family. However, the camp has not been designed to embrace such an idea and if the camp has attempted to define a main street with little shops, this particular individual does not live in that area. Nevertheless, he erects the shop next to his shelter. With more people in the same circumstance, the shops and services are shattered within the transforming camp and reduce the economic rate of the booming city. [24]

The camps should be considered 'interchange stations' where refugees and victims of disasters are secure and receive some preparation for a self-sufficient life in the future, no matter where that future takes place – in their home country or in a foreign country. However, in many cases, such camps turn into refugee cities where people continue to live for decades.

The other types of camps are reception and transit camps, also called Hotspots. Such camps are temporary places of refuge for refugees who have only just arrived from their own countries (before they are moved to other, more suitable and better-prepared camps) or who are about to be repatriated. Such camps are designed for a short stay of between two and five days. Reception and transit camps are characterised by a high turnover rate. The primary criteria for planning this type of camp are good access, availability of water, good drainage and a terrain with a slope of 2-5 percent, sanitation units that satisfy all the requirements and a strategic location. Reception and transit camps are also characterised by a permanent infrastructure and operational maintenance, for example with regard to disinfection. Since the residents are only expected to stay for a short period of time, the minimum space required is 3.0m^2 per person. Such camps often provide mass accommodation in the form of barracks or big tents. A room with an area of 85m^2 may serve 14 to 25 persons who will only be staying for a few days. However, in rooms of that size, partitions are advisable between every group of five persons, to give families some privacy. Sanitation units, too, can serve more people than in other, more permanent camps, namely twenty persons per latrine and fifty persons per shower. Other important standards to be met are food preparation zones (100m^2 per 500 persons), storage (150-200m^2 per 1000 persons), arrival/departure zones that are separate from the accommodation zones, and separate accommodation for persons held in quarantine. Public buildings can be used for these types of activities, too.

For effective interventions, close coordination and cooperation with other sectors are required. For example, it is necessary that adequate water and sanitation facilities be provided in the area where the shelters are deployed to ensure the health and dignity of the affected people.

§ 5.4.5 Modular, Circular Model Camp – MCMC

The Modular, Circular Model Camp for the refugees was designed by the author of this thesis as example of a layout that includes the aforementioned indicators and values.

The camp with a circular layout, was designed for one thousand inhabitants. The camp was created as a model example, without any specific context. The only information provided was the location of the camp, which was in Lebanon. Therefore topography and land ownership were not an issue. It was assumed that the planned camp would have access to water.

The area of the camp is 75,500m^2. The camp has a circular plan with a 310-metre diameter. One thousand persons are expected to live in the camp, mostly refugees from Syria. This amounts to 75.5m^2 per person, which is 66% more than the minimum standards (45m^2/ person). Since the camp may grow and turn into a city, space must be reserved for expansion. The circular plan allows the camp to grow proportionally towards the outer rim, by creating additional rings. However, the number of inhabitants should not exceed 2,000.

A bottom-up approach is adopted, which means that the community level is the basic social unit of the camp. There are twenty communities, each consisting of eight shelters, i.e. 30-40 inhabitants. Each community possesses its own services, such as latrines, water supply and a cooking area. The shelters are installed at a sufficient distance from each other (four to five metres), meaning that further expansion is possible. Each community plot is divided into a semi-private space for daily activities and private parts, which surround the shelters. Six communities form a quarter (see Fig. 5.11). There are five housing quarters, with 240 inhabitants each (see Fig. 5.9). A sixth quarter is dedicated to services (nutrition, health care, education, culture) and infrastructure (warehouses, workshops).

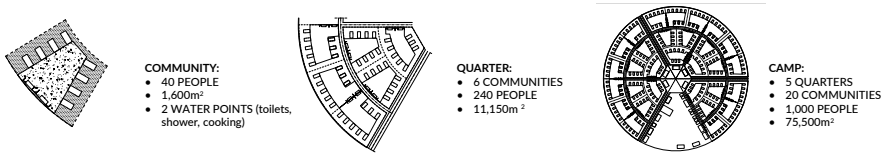


FIGURE 5.9 Community, quarter and camp relations

The master plan for the camp involves a circle divided into six quarters (see Fig.5.10). These are separated by roads. There are two types of roads: roadways, which stop at the outer perimeter of the camp, and secondary roads, which can be used by pedestrians and are also used to provide water to the communities. In the middle of the camp, there is a central square with utility buildings, which in time can transform into local market supporting the growth of the economy. The uninhabited area of one-sixth of the camp is reserved for public buildings and public spaces, and for potential entrepreneurs and businesses. This area is dedicated to all the activities the camp needs to operate smoothly, such as nutrition centres, distribution points, health care and education. In time, the place will be able to host activities such as education, sport, recreation, production and trade, as well as public services.

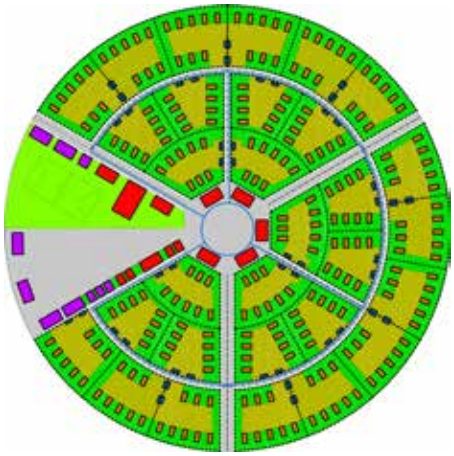


FIGURE 5.10 Modular Circular Model Camp master plan

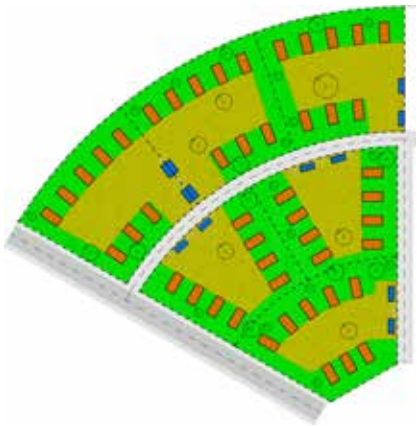
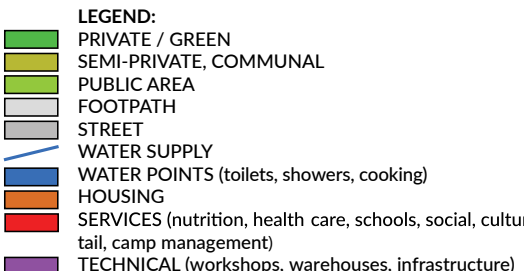


FIGURE 5.11 MCMC quarter plan



The design of the MCMC is based on the indicators and standards provided by aid organisations and professionals. The camp has a circular plan. However, in reality, the terrain and topography of the place, as well as its connections to existing infrastructure (i.e., roads), may significantly affect the model layout. What is important about the plan is the spatial relation between the community areas, their sizes and the camp's potential for growth and development.

The circular master plan, which is reminiscent of the ideal cities of the sixteenth century, such as Palmanova, or of the nineteenth-century idea of garden cities first proposed by Ebenezer Howard, allows planners to keep a dense and compact layout with minimal distances and easy control.

§ 5.5 Shelter

Everyone has a right to adequate housing. This includes the right to live in security, peace and dignity, with legal protection for tenants, as well as protection from forced eviction and the right to restitution. [22] Shelters are hugely important in camps, being the places where people who have lost their homes or have been forced to leave them can find safety, privacy and relief from their traumas. Losing one's house is one of the most important factors contributing to primary stress. The right kind of shelter brings protection against climatic conditions and serves as a transitional home, where people have their belongings, space to live and emotional security. It should be suitable for different seasons and should also be culturally and socially appropriate.

The type of shelter and the type of settlement is determined by the type and scale of the disaster and the extent to which the population is displaced.

There are four different types of relief accommodation, which can be used by victims of human-made and natural disasters and the homeless (see Fig. 5.12): [27]

- **Emergency shelter** – a place where survivors stay for a short period of time during the height of an emergency. This can be in a friend or relative's house, public shelter or public place.
- **Temporary shelter** – used for a stay that is expected to be short, ideally no more than a few weeks. The shelter may be a tent or a mass shelter shared by many people.
- **Temporary housing** – a place where victims or homeless people can reside temporarily for a period ranging from six months to several years. They can learn to return to their normal daily activities (if they are victims of natural or human-made disasters) or re-adapt to society (if they are homeless people). The house may be prefabricated, or alternatively, it may be a rented house or apartment.
- **Permanent housing** – the rebuilt house to which the victim returns, or a new house in which the victim will be resettled and live permanently.

The first three types are referred to as **temporary accommodation.**

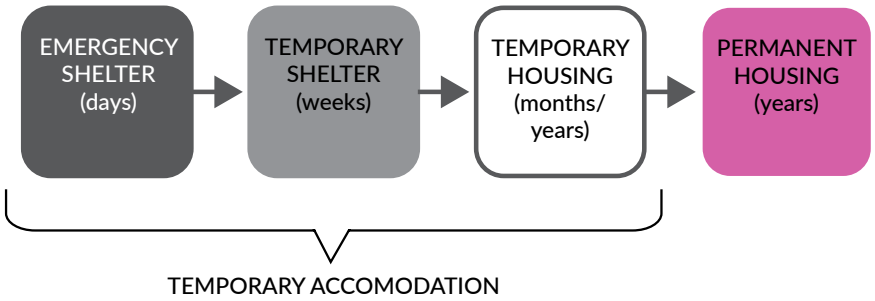


FIGURE 5.12 Shelter typology

The term 'shelter' refers to a place to stay during the period immediately after the disaster that has suspended the victim's daily activities. The term 'housing' involves a return to household responsibilities and a daily routine.

The typology proposed by the International Federation of Red Cross and Red Crescent Societies divides post-disaster (natural and human-made) shelters into the following categories (see Fig. 5.13): [28]

- **Emergency shelter** – a short-term shelter that provides life-saving support, the most basic shelter that can be provided immediately after a disaster.
- **Temporary shelter** – a post-disaster household shelter designed as a rapid shelter solution. The lifetime of the shelter may be limited due to the fact that rapid and low-cost construction must be prioritised.
- **Transitional shelter** – a rapid post-disaster household shelter made from materials that can be upgraded or re-used in more permanent structures, or that can be relocated from temporary sites to permanent locations or be recycled. They are designed to facilitate affected people's transition to a more durable form of shelter.
- **Progressive shelter** – a post-disaster household shelter planned and designed to be upgraded to a more permanent shelter at a later stage. This can be achieved by further integrating transformation and alteration possibilities into the structural basis of the unit.
- **Core shelter**/One-room shelter – a post-disaster household shelter planned and designed as a permanent dwelling. Core shelters allow future expansion of the shelter by the inhabitants, thus turning it into permanent accommodation.Core shelters allow

facilitating and future process of extension by the household in order to end up as a permanent accommodation. The purpose of a core shelter is to create a one-or-two-room home that provides safe post-disaster shelter that reaches permanent housing standards and facilitates development. This type of shelter is mainly used in areas stricken by natural disaster, as forcibly displaced people aim to return to their home countries.

Temporary shelters and transitional shelters are often called '**T-shelters**'.

The various types of shelters overlap, as sheltering is a process rather than a product. Phrases such as 'transitional shelter', 'progressive shelter' or 'core shelter' relate to an approach rather than a phase of response. The design of a shelter cannot be transitional or progressive on its own. What is critical is the context in which the shelter is built.

The terminology used is influenced by a mixture of contextual factors. They range from the level of permanence expected of the shelters and the materials from which they are made, the site on which they are built and local politics.

Emergency shelters are usually provided in the aftermath of a disaster.

T-shelters are designed for a limited lifespan and are intended to be relocated, re-used or recycled.

Progressive shelters and core shelters are built on permanent sites with the goal of becoming part of a permanent solution. This solution is applicable in the event of a natural disaster, as the people affected by the disaster do not have to leave their own country.

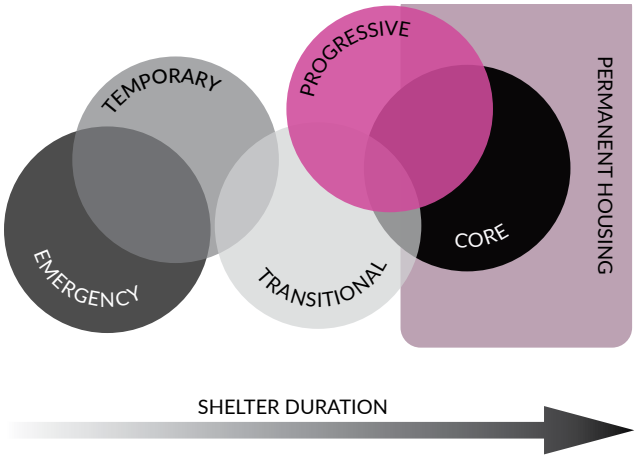


FIGURE 5.13 Types of shelters according to the IFRC, adopted from [28]

It is highly advisable that future inhabitants take part in the process of constructing their own houses, as this will reduce costs and promote a sense of ownership and self-resilience.

An individual family shelter is always better than communal accommodation, as it provides psychological comfort, privacy and emotional safety, and supports the reunification of families after all the traumas they have suffered. A shelter should be made out of fireproof material, especially when heaters are used inside the shelter. Minimal equipment like blankets, mattresses, heaters and extra plastic sheets should also be provided.

The most proper set-up and materials for shelters are those with which their future users are familiar because they used them in their places of origin. Prefabricated or special emergency shelters often do not prove to be a practical solution, either costs-wise or with regard to the users' cultural background. However, in urgent situations, the use of prefabricated shelters is advisable. The most common solution is family tents. The biggest problem with this is that tents which are intended to be used for no more than six months end up becoming permanent accommodation. This kind of accommodation lacks basic features such as security, thermal insulation and privacy, and therefore leaves refugees in an insecure situation.

The most desirable solution is a shelter made of local material, which is easy to construct and labour-intensive. However, the use of local materials and resources like

wood, soil, plants, etc. can damage the local environment. Ideally, the material used for a shelter would be environmentally friendly.

he minimum standards for the size of a shelter are: [22, 23]

- **Minimum area of 3.5m² per person in warm, tropical climates**. This area does not include cooking spaces, which can be organised outside.
- **Minimum area of 4.5 to 5.5m² per person in colder climates or urban situations**, where the cooking and bathing facilities are inside the shelter.

The structure of the shelter should allow modifications and flexible arrangements. It is worth keeping in mind that in cold climates, most of the daily activities will take place inside the shelter.

As mentioned before, prefabricated shelters or buildings often do not prove efficient, even if they have proper thermal insulation. The main reasons why they are not efficient are as follows:

- The shelters require long and costly production and shipping
- The shelters must be assembled
- The shelters get hot in hot climates
- The shelters may not satisfy cultural and social norms
  The shelters should be manufactured in advance and prepared for transportation.

Shelters to be used in regions with low temperatures, snow and rain in which wintery conditions may last for three to five months at a time must meet the following criteria:

- Structural stability
- The components and parts of the shelter (walls, roofs, windows, doors) must be protected against the wind
- Parts of the shelter must be insulated
- Kitchens and sanitary units must be protected and heated
- The indoor temperature should be at least 15°-19°C
- A 5-7 kW heating stove should suffice to heat a space with an area of 40 to 70 square metres. The heating stove should also be able to be used as a cooking facility.

Sheltering as a process requires the appropriate approach to a whole range of factors that are crucial for the humanitarian response. Shelter as a physical object is just the hardware part of the whole range of support, which also includes water supply, nutrition, sanitation and psychological and physiological health care that ensures the health and dignity of people whose lives have been upended. However, this hardware is essential for the well-being of people in extremely difficult situations, in that it provides them with the protective conditions they need to live in security, comfort and privacy.

§ 5.5.1 Function-oriented design for emergency and relief architecture

The pyramid of needs created by the American psychologist Abraham Maslow in 1943 helps us understand the hierarchy of human needs. Despite the fact that the pyramid is a simplification and some exceptions have to be taken into account, it helps us understand more clearly what the areas of needs are. As Maslow argues in his book Motivation and Personality, 'At once other (and higher) needs emerge, and these, rather than physiological hungers, dominate the organism. And when these in turn are satisfied, again new (and still higher) needs emerge, and so on. As one desire is satisfied, another pops up to take its place.' [29]

People who cannot satisfy their first, primary needs will not be able to satisfy other, higher needs, either. The pyramid depicts from the bottom to the top what the essential needs of living creatures are and how they can be managed by humans.

The first level comprises needs common to all living creatures. They are called physiological needs – things such as breathing, food, water, sex, sleep, homeostasis and excretion, which are basic conditions to survive. These physical needs do not motivate people once they have been satisfied.

The next level comprises needs that operate on a psychological level: safety-related needs. People need to experience physical security and have secure employment, resources, morality, a family, good health and property.

These first two layers of needs are vital from the emergency architecture point of view. Basic needs can be satisfied, and once they have been satisfied, they disappear. Basic needs determine whether or not there is room for higher needs, which are represented by the next three levels of Maslov's pyramid.

The need for love and a sense of belonging make up the third level of needs. They emerge once a person's physiological and safety needs have been satisfied. As Maslow put it, giving love means that a man who attains this level will *feel kindled, as never before, by the absence of friends, or a sweetheart, or a wife, or children*. [30] Similarly to the primary needs, the need for love and a sense of belonging is only felt when a person experiences a lack of love and belonging.

The conceptual model of human-centred design created by Zhang and Dong (2009) shows that Maslow's pyramid of needs is parallel to design evolution (see Fig.5.14). According to Zhang and Dong, physiological and safety needs can be fulfilled by function-focused useful design. Esteem and social needs can be satisfied by usable, consumer-focused design, while self-actualisation needs can be satisfied by desirable (or pleasurable) human-focused design. [31]

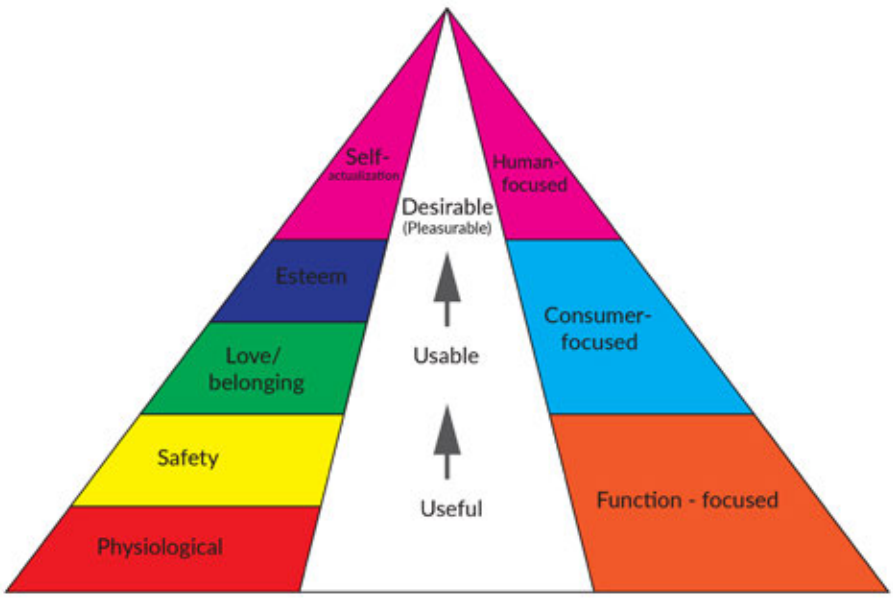


FIGURE 5.14 Pyramid of needs and design evolution, adopted from [31]

It seems obvious that emergency shelters represent function-focused design, which is useful and fulfils the physiological and safety needs. However, it is important to see the broader perspective in relief architecture. After providing the necessary shelters that satisfy minimum living conditions, camp planners should consider the next step,

and upgrading of the shelter, and the design of the whole plot of the emergency camp, should be taken into account from the beginning of the whole aid process.

This argument shows that the provision of temporary shelters – actual houses with solid walls and roofs instead of tents – may have a significant impact on the development of the persons temporarily living in emergency or refugee camps. The tents provided by UNHCR barely fulfil physiological needs and often do not meet the requirements to satisfy the safety needs, either. Take, for example, the tents provided to the refugee camps in Iraq. During the winter of 2014 and 2015 many of these tents collapsed because of the heavy snow that had fallen on them. New solutions should be adopted that ensure better thermal comfort, with rigid walls that will give refugees a feeling of safety as well as of privacy. Comfortable houses would also go a long way towards fulfilling the need for love by giving to the family their own space.

§ 5.6 Emergency shelters

Emergency and relief architecture can be manufactured out of paper elements and components. The projects presented below are categorised by type of shelter, depending on the duration of the time during which the shelters will be used (emergency shelter – emergency housing – temporary housing – permanent housing) and hence their complexity.

§ 5.6.1 Paper Partition Systems nos. 1-4

After the Niigata earthquake of 2004, people affected by the earthquake were forced to evacuate to gyms and large buildings with high ceilings, where they had no privacy. This was a source of much distress. To alleviate this distress, Shigeru Ban and his students from Keio University proposed Paper Partition System no. 1 (PPS 1), a simple paper structure to be erected inside the evacuation site to give people some privacy (see Fig. 5.15). Paper honeycomb boards were used for flooring and walls, and the roof structure was made out of square paper tubes. The dimensions of the structures allowed them to be transported by minivan, and the joints and assembly process were designed in such a way as to make construction easy for refugees without specialist knowledge. PPS_1

was designed for family use. However, the prototype was mainly used for studying, games, a clinic for the elderly and breast-feeding babies. [32]

FIGURE 5.15 Paper Partition System no. 1

FIGURE 5.16 Paper Partition System no. 2

One year later, after the Fukuoka earthquake, Ban proposed Paper Partition System no. 2, in which honeycomb panels were used only as partition walls, with an approximate height of one metre (see Fig. 5.16). This change was implemented due to a need for overview and control of overcrowded places. PPS 1 did not allow that, thus creating a situation with a potential for violence. Paper Partition System no. 3 is an improved version of PPS 1 and PPS 2, in which white fabric curtains are hung from a frame made of paper tubes (see Fig. 5.17). This third version was lighter and cheaper and could be assembled by any volunteer. It provided full-height partitioning that gave families some privacy. In PPS 3 the connections between the paper tubes are wooden prefabricated elements. This solution was changed in PPS 4, in which paper tubes were inserted into each other, which resulted in an even cheaper solution, as well as faster assembly (see Fig.5.18). [32]

FIGURE 5.17 Paper Partition System no. 3

FIGURE 5.18 Paper Partition System no. 4

§ 5.6.2 Cardborigami

Cardborigami is a simple shelter developed by Tina Hovespian during her studies at the School of Architecture of the University of South Carolina. The designer was inspired by origami folding techniques, which she decided to use on a bigger scale to create a tunnel-like shelter for homeless people in the United States and victims of natural disasters (see Fig.5.19). Hovespian's pop-up shelter can be folded flat, which is handy. Homeless people can take it with them after spending a night in it. The shelter can be erected by simply unfolding the C-shaped flat package, which will create a tunnel that can host two people. Cardborigami provides users with a very basic shelter – basically, just a roof over their heads. It is made of corrugated cardboard, which is waterproof and flame retardant. As Hovespian has said in interviews, the shelter itself is just a part of a whole four-step path developed by the architect, designed to help people get out of homelessness and back on their feet.

FIGURE 5.19 Cardborigami

§ 5.6.3 Instant Home

A similar concept, albeit not made out of cardboard, was the Instant Home designed by the author of this thesis during his studies at Wroclaw University of Fine Arts. Instant Home is a kind of portable shelter that also serves as a sleeping bag, hammock and raincoat (see Figs. 5.20-5.22). The project was realised at the Academy of Art and Design in Wroclaw, under the supervision of Prof. Wlodzimierz Dolatowski. The project was geared towards homeless people living rough. Its approach was inspired by an American group of designers called the Mad Housers, who decided to help the homeless living on the streets regardless of the fact that this is against the law. Another source of inspiration was the works of Polish designer Krzysztof Wodiczko, particularly his Homeless Vehicle Project. The idea was based on an analysis of the needs of homeless people as well as their difficulties, especially during the wintertime. Instant Home is made of the waterproof fabric Cordura®, filled with inflatable elements that serve as thermal insulation and bedding. Instant Home was tested by a group of homeless people in Wroclaw and was later displayed at the Wroclaw Contemporary Museum. The images below were drawn by a homeless artist, Zbigniew Majchrzak.

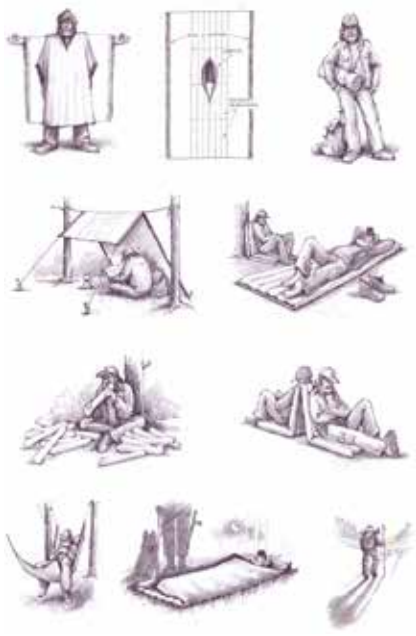


FIGURE 5.20 Sketches made by Zbigniew Majchrzak, homeless artist

FIGURE 5.21 Instant Home worn as a raincoat

§ 5.6.4 LWET – Lightweight emergency tent

Family tents are the most popular solution for shelters. Their size, shape and lifespan depend on the situations in which they are used, and on the manufacturer, climatic conditions, occupants' behaviour and duration of the period of storage before deployment. The tents most commonly used are semi-circular tunnels with a centre height of 210cm, a width of 300cm and a length of 550cm. They consist of two layers: a waterproof external layer and an inner tent. There is a 12cm continuous gap between the two layers. The floor area of the tent is 16.5m^2, which meets the minimum standards for a five-member family. Tents also come in other shapes, e.g. with straight walls, but they all have a floor area of approximately 16m^2. Tents do not provide sufficient thermal insulation, but in an emergency situation they can be used as a temporary shelter, until a proper shelter can be constructed.

After the genocide in Rwanda in 1994, two million refugees were left without homes. The first aid provided by UNHCR consisted of plastic sheets and tools with which to fell trees, so as to be able to create the structures needed for refugee tents. However, the number of structures required was so enormous that logging posed a serious threat to the woods, which might result in an ecological disaster. UNHCR responded by distributing aluminium piping for the tents. However, the precious material was sold for some much-needed cash by the refugees, and the logging continued. So instead of expensive aluminium, Shigeru Ban proposed paper tubes, which were strong enough to hold the canvas of the tents in place and moreover unprofitable (see fig. 5.23). Paper tubes were also used to build tents in post-disaster recovery attempts in Sri Lanka in 2008 and in Haiti in 2010 (see Fig.5.24). [32]

FIGURE 5.22 UNHCR tent with paper tube structure, Rwanda, 1999

FIGURE 5.23 Structure for a tent, made of paper tubes, Sri Lanka, 2008

§ 5.6.5 Paper Log House

Paper Log House is a temporary housing project first proposed by Shigeru Ban after the great Hanshin-Awaji earthquake in Kobe in 1995. A detailed description of the project is provided in Chapter 4, Section 4.3.4. The first version of the Paper Log House, which consisted of 27 pieces, was later implemented in Turkey (see Fig. 5.25), India (see Fig. 5.26) and the Philippines. Each time, the project was adapted to local atmospheric conditions and materials.

FIGURE 5.24 Paper Log House, Turkey, 2000

FIGURE 5.25 Paper Log House, India, 2001

§ 5.6.6 Training House – unbuilt

The Training House project was designed as part of the author's Master's research under the supervision of Prof. Zbigniew Bac at Wroclaw University of Science and Technology's Faculty of Architecture in 2009. [19]

The Training House was designed for homeless people living in places of collective residence. The Training House serves as a 'transitional stage' between the stages of homelessness, life in a hostel or reception centre for the homeless and life in a subsidised house. During their 6-18-month stay at the Training House, residents learn how to manage and look after their own space, under the supervision of social workers. Training houses are necessary because when homeless people stay at reception centres or hostels, they have no responsibility for the spaces they live in. This lack of training before they are granted social housing often results in homeless persons not being able to cope with their new responsibilities and thus returning to the hostel system, which

is bad for both the homeless person and the Polish system of aid provided to people recovering from homelessness. The building designed as part of the project could also be used as an emergency house for disaster victims. The type of accommodation provided by the Training House is temporary housing, which can be used for up to 1.5 years before being recycled.

The purpose of the project was to create a house made of inexpensive and environmentally friendly prefabricated elements. The concept involved the creation of a framework of paper tubes with an external diameter of 200mm and an internal diameter of 150mm. The joints between the tubes were made of solid wood. The frame of the paper tubes was filled with wall and roof panels consisting of honeycomb panels and a filling of Warmcel Excel® thermal insulation material. Wall thickness was 27.5mm. The walls were covered with polyethylene film and glass fibre to protect the surface of the building's walls from damage (see Fig. 5.28).

The floor and the flat roof were made of coffers of plates of honeycomb panels stacked orthogonally or diagonally, depending on the shape of the room. The foundations were steel feet combined with a construction made of paper tubes.

The design was based on the concept of basic accommodation units with different functions (living room, bedroom, kitchen, bathroom, workshops, storage) and different shapes (triangular, rectangular, pentagonal or hexagonal in plan). By alternating and combining these shapes, the designers were able to provide 84 different spatial layouts which could be used by 3 to 42 inhabitants. There are base units, which are connected to the existing infrastructure, and supportive units, which can be changed and replaced in time (see Fig. 5.27).

One version of the project proposed a building that would act as a parasite to an existing building, benefitting from its infrastructure. Another idea was to build a complex of buildings on the land belonging to the St Albert's Aid Society in Wroclaw (see Fig. 5.26).

FIGURE 5.26 Training complex on the land of St Albert's Aid Society in Wroclaw

FIGURE 5.27 Training House – plan view

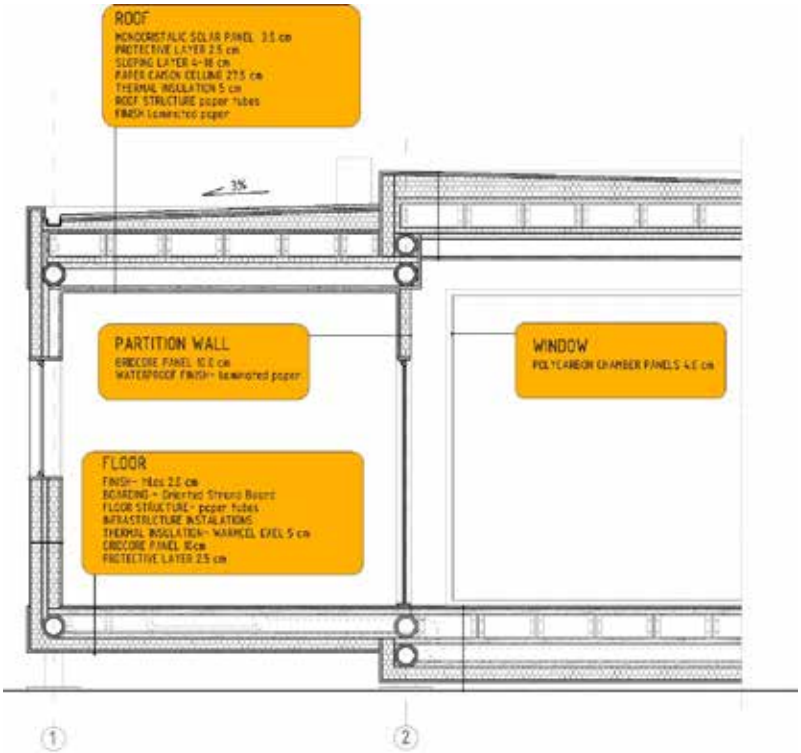


FIGURE 5.28 Training House – section

§ 5.6.7 House for victims of earthquakes in the Pacific Ring of Fire, Japanese case study – unbuilt

An interesting example of a post-disaster relief house made of paper elements is a project designed by Paulina Urbanik as part of her engineering degree from Wroclaw University of Science and Technology. The project prepared under the supervision of Dr Anna Bac was entitled 'House for victims of earthquakes in the Pacific Ring of Fire, Japanese case study'. The house is a core house type of emergency shelter designated for victims of earthquakes, designed for twelve locations around the Pacific Ocean. As the case study pertained to Japan, the project refers to Japanese culture, traditions in Japanese architecture and Buddhism. Urbanik studied people's tendency to transform temporary houses into permanent residences. She then proposed a structure made of paper, which forms the core of the house. The house is made of recycled materials.

Every house follows the same universal structure, made of paper components. This structure is made of multi-layered panels, composed of different materials, depending on the local climate and the availability of products. The houses are based on a 3x3m modular grid.

The floor area of the various types of houses depends on the number of occupants. The spaces can be enlarged if necessary – for instance, when a family's spatial needs change. The interior is an open space that can be transformed from a living room into a bedroom and back again as needed (see Fig. 5.29). [32]

FIGURE 5.29 House for victims of earthquakes in the Pacific Ring of Fire, Japanese case study

§ 5.7 Conclusions

The Arab Spring, which started in 2011, and persecution and conflicts in other parts of the globe, especially in Africa, resulted in the largest number of forcibly displaced people since World War II, reaching a whopping 65.6 million in 2016. Some 22.5 million of these forcibly displaced people were refugees, i.e., people who had to flee from their home countries due to human rights violations. Approximately 5.2 million refugees made their way to European countries. However, the largest number of

refugees (13.9 million) is hosted by developing countries. In addition to refugees, the world is dealing with groups of internally displaced persons and asylum seekers. Each of these groups requires a different approach and is characterised by diverse needs. Asylum seekers are required to stay at reception centres or asylum seekers' centres while their applications are pending. Those who are granted refugee status enjoy freedom of movement and are given the right to work and/or receive an education in their host country. However, initially refugees are only given a temporary right to stay. They have to adapt to a new reality and this activation is most effective in groups, due to the costs involved and for organisational reasons. In general, refugees are accommodated in places such as planned or self-settled camps or collective centres.

It is internationally agreed that everyone has the right to live with dignity, the right to protection and the right to security. Therefore, international aid agencies and organisations such as UNHCR or the Red Cross make an effort to help people suffering difficult housing situations or living in poverty. The provided solutions consist of two parts. One is 'soft support', which consists in the provision of health care, psychological support, education and help adapting to one's new reality. The second is 'hard support', which consists of food, commodities and shelter. Architects are responsible for providing the latter. Accommodation for people affected by natural disasters or warfare has to be provided in combination with other resources. The procedures relating to, and the duration of such types of support, depend on the situation, local policy, type of threat (whether it is a military conflict or a natural disaster) and many other factors.

In many cases, refugee camps settled as an emergency and temporary solution turn into a protracted situation. Entire families are born and bred in refugee camps. The average duration of a person's stay in a camp is seventeen years. [2] However, there are many camps where refugees have stayed for more than twenty years. Therefore, refugee camps are in fact becoming refugee cities, where people still live in tents provided by UNHCR. These 'temporary shelters' are transformed, remade and extended by the camp population. It is vital that these refugees are provided with adequate shelters that satisfy their primary needs. The function-focused design approach encompasses structure and materialisation, finances and ecological issues. However, temporary housing units should be culturally appropriate for the community. At the same time, production and assembly must be simple and quick, especially when large-scale housing is needed in the short term.

It is not just about refugees, though. Homeless people in developed countries also need support and proper treatment.

Homelessness is a broad and hard-to-define problem. The ETHOS typology created by FEANTSA indicates that homelessness comes in many guises, some of which may

not even be visible. Hidden homelessness is difficult to detect, which makes it hard to provide an adequate level of support. The most visible types of homelessness are rooflessness and houselessness, which are associated with people living rough, in shelters or in institutional accommodation. People living rough need support in the form of emergency shelters or temporary shelters. Those who have already decided to get out of homelessness and have embarked on an individual programne designed to help them do so will receive a house provided immediately (Housing First method) or gradually improved accommodation (Continuum-of-Care method). Homeless people must receive support at every stage of their being, but there are two crucial moments when it is particularly crucial they receive help. One of them is the moment when a person loses his/her home and becomes physically homeless. If s/he is provided with help immediately after this happens, there will be no further consequences, such as degradation and psychological identification with homeless people. Another turning point is the moment when a homeless person decides to stop being homeless. The process of leaving the insecure situation that is being homeless should be supported by appropriate accommodation that enhances personal development.

There are two main strategies for defeating homelessness in terms of housing. The Housing First concept revolves around the idea that a communal apartment supervised by social workers provides a stronger base for the fight against homelessness and exclusion, while the continuum-of-care concept is divided into three stages: prevention, intervention and integration. The accommodation provided should be appropriate to each of these stages, and the housing conditions should improve as the homeless person continues to make personal progress. Adequate housing can significantly support both strategies. It is difficult to estimate the number of homeless people due to the complexity of the problem, but the statistics show that there are almost two million homeless people in OECD countries. Worldwide there are 1.6 billion people without adequate housing. People who have fled the Middle East and Africa to go to European countries but will not be granted refugee status are in danger of becoming homeless. Thus the homelessness problem may grow significantly worse over the next few years, and it is vital that support is provided – both 'hard support' (housing) and 'soft support' (social care).

As far as the six types of refugee accommodation are concerned, planned camps in rural areas, reception transit camps and collective centres are of greatest concern to professionals who deal with designing camps. Since individual accommodation is mostly private, it is beyond the scope of management. Spontaneous camps should be avoided to the maximum possible extent.

The design of the camp should be based on the smallest social group and should take into consideration the population's gender and age structure as well as their country of origin and cultural background.

It is essential to the safety and well-being of refugees that the site of the camp be selected, the camp be planned and the shelters be built in accordance with specific criteria. Such actions should be undertaken using an integrated approach supported by specialists, with input from refugees.

The site for the camp should be chosen and prepared prior to the arrival of the refugees or people affected by a natural disaster. Several criteria should be carefully studied, such as land ownership, topography and accessibility, water supply, size of the site, the predicted maximum number of inhabitants, climatic conditions and vegetation.

The minimum size of a camp should be 45m^2 per person. However, due to the fact that the population of the camp will grow by an estimated 3-4% annually over time, and that the refugee camp will possibly start resembling a refugee city in the end because people end up staying there for many years, an additional plot of 50-100% the size of the original camp should be reserved. The camp population should not exceed 20,000, but a population of 500-2,000 inhabitants is advisable.

The planning of the camp should have a bottom-up approach, which means that the basic structural social unit should be the family, and that a community should be no larger than one hundred people or sixteen families. The next social unit after the family is the community. Each community should possess its own services, such as a latrine (which should not serve more than twenty people), showers, water supply, rubbish collection, etc. Apart from the family and the community, camps will have the following organisational modules: a block (which consists of sixteen communities), a sector (which consists of four blocks) and a site (which consists of four sectors). The master plan should take into account not only housing areas but other functional areas and services, such as nutrition and distribution centres, health care and education, religious and cultural places, markets and places for recreation. Since there is a chance that the camp may one day turn into a refugee city, there should be enough space for daily-life activities and possibly shops in the camp.

The right shelter will provide protection against climatic conditions and serve as a transitional home, where people have their own belongings and room to live, and where they can find emotional security. The shelter should be suitable for different seasons and be culturally and socially appropriate.

The type of relief accommodation to be used depends on the urgency of the demand and the expected lifespan of the accommodation. An emergency shelter is a short-term shelter that provides life-saving support. As it is the most basic type of shelter and can be provided immediately after a disaster, it should not be used for longer than a few days or weeks. A good example of such shelters made out of cardboard are the Paper Partition Systems (versions 1-4) designed by Shigeru Ban for people affected by earthquakes, who were evacuated and brought together in gyms and other public buildings that could provide large groups of people with emergency accommodation. Cardborigami by Tina Hovespian is another example of an emergency shelter, this one designed for homeless people living rough. Another option is a temporary shelter, which is used for people who are only expected to remain in a certain place for a short period of time – ideally no more than a few weeks. Temporary shelters tend to be tents or places in mass shelters. However, the most popular solution in emergency situations is UNHCR's lightweight emergency tents, which are used for months or even years at a time, even though the assessed lifespan of a typical UNHCR tent is 6 months. Temporary housing is defined as a place where people can engage in normal daily activities. Such accommodation may come in the form of prefabricated houses such as the Paper Log House or the author's Training House. Temporary shelters and temporary housing are so-called 'transitional shelters', which means that they are erected for a limited period of time – i.e., just a few months. Such shelters must later be re-used, relocated or recycled. Other types of shelters include progressive shelters and core shelters, which can be turned into permanent houses at the later stage. However, this is only possible if the people know for certain, that they can stay in that place.

The minimum size standard for a shelter is 3.5m^2 per person in warm climates and 4.5-5.5m^2 in cold climates. This means that a typical five-member family of refugees who fled Syria will receive a shelter with a floor area of 17.5m^2. The design of the shelter should allow for upgrading or resizing at a later stage if necessary.

The design of the shelter should satisfy certain specific criteria such as structural stability, protection from wind and rain, insulated walls, easy assembly and easy transportation/storage. Furthermore, the shelter should be in line with cultural norms. The design of the shelter should be function-focused and take into consideration the further growth and self-sufficiency of the inhabitants. The materials used to build the shelter should be environmentally friendly as the huge amount of building waste left afterwards can have a devastating effect on the local environment.

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