



UNCHS (Habitat) Mission to Pakistan and Afghanistan, June/July 1989

AFG/86/033



Research in Indigenous Building Materials

Summary

The mission travelled to Pakistan in order to assess the needs for assistance in the reconstruction of homes in war-affected areas of Pakistan. The focus was on the resistance-held areas of the country. Mission members also spent one week in the Afghan capital Kabul, to discuss revisions to a building research project with government officials. The team leader was subsequently involved in a 12-day UN field mission to resistance-held parts of Kandahar province in southern Afghanistan. First hand observations of conditions in rural areas were, with the exception of Kandahar, impossible. The mission relied on accounts of those working in the country for an overview of the situation.

The process of resettlement and reconstruction will depend on the return of the 4 million Afghans who left their homes during the war. The scale of hostilities in many rural areas has abated since the Soviet withdrawal in 1988, and there is a greater sense of security for some village communities. There are still considerable political obstacles in the way of widespread return, the pace of which is said to be limited.

The housing of rural Afghanistan is diverse in forms and the use of materials. Materials have in the past been available locally, and villages have built for themselves.

Reconstruction will depend primarily on the will to resettle. Materials for re-building are available in most areas, although there are reported to be local shortages of timber for roofing. The availability of labour for building varies, and will depend on the return of able-bodied refugees to their homes.

In the absence of any unified civilian authority in most resistance-held areas, non-governmental organisations (NGO's) are the most effective channels for assistance to rural communities. They have, during the war, developed links with the population, and are in a position to assess and respond to local needs. Latterly, regional and provincial committees have emerged to co-ordinate reconstruction. They have as yet limited experience and authority.

There can be no single solution to the housing needs of rural Afghans. Families are traditionally self-reliant, and many will be able to re-build for themselves. Massive intervention in housing reconstruction is not appropriate. There is a case for limited activities to assist some of the returning families in re-building their own homes in areas of greatest need. The aim should be to encourage resettlement on a larger scale.

In these circumstances, the mission recommends support for the following activities, as an effective contribution to the process of resettlement :

a) a series of small pilot projects on separate rural sites aimed at assisting in self-build reconstruction and repair. Projects should explore the options for intervention, including the supply of labour and materials, or manufacture.

b) support to existing builder training projects to develop building skills amongst Afghans who will re-build for themselves and others.

c) co-ordination of, and technical and management support for all groups who are involved in housing reconstruction.

CONTENTS

	Page
PART 1	
i) Terms of reference	1
ii) Objectives of the report	1
PART 2	
i) Background	2
ii) Rural housing forms	4
iii) Building materials	5
iv) Building methods	8
PART 3	
i) The consequences of the war	12
ii) Adapting to exile	15
iii) The potential for reconstruction:	18
a) return	18
b) housing needs	18
c) labour	19
d) materials	20
PART 4	
i) The management of reconstruction	22
ii) Recommendations for assistance	25
ANNEXES	
1 Mission itinerary	31
2 People consulted during the mission	32
3 Material costs	33
4 General building costs	34
5 The geography of destruction	35
6 Refugee case studies	37
7 Transport costs	41
8 Bibliography	42

PART 1

Terms of reference

The present mission has been undertaken under provision of project AFG/86/033 of the UNDP Afghanistan Country Programme for the Fourth IPF cycle (1987-91). UNCHS (Habitat) has been designated the executing agency for the project, entitled "Research in Indigenous Building Materials".

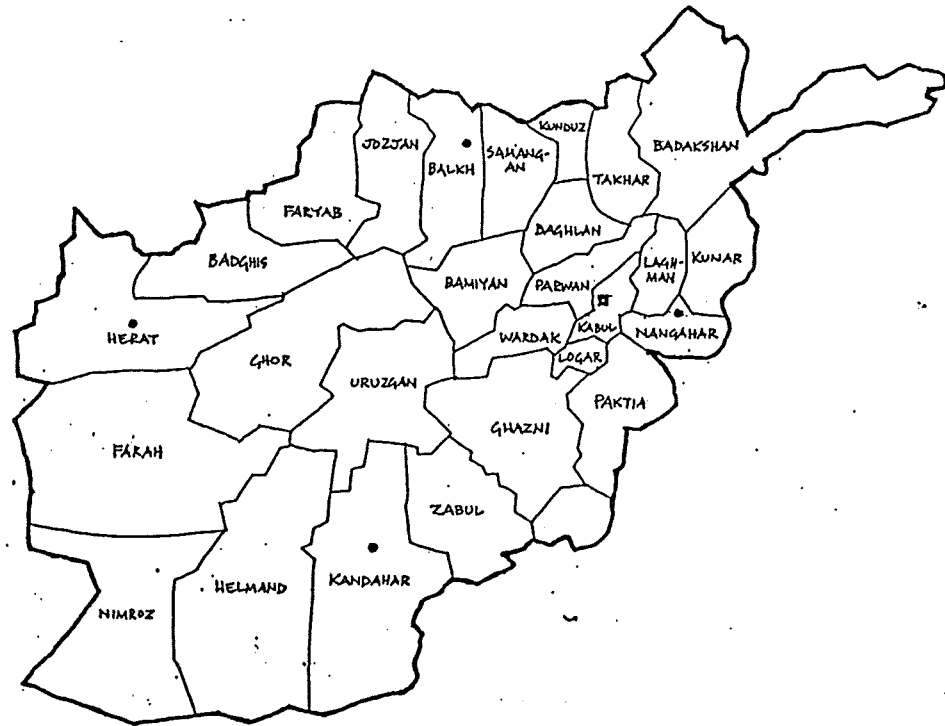
The mission was asked to address the issue of the reconstruction of homes in Afghanistan. The emphasis was on low cost solutions to meet the housing needs of the rural population forced from their villages during the war.

Specifically, the mission set out to:

- i) identify the technical and logistical options that are appropriate for reconstruction in the present circumstances.
- ii) assess the current rebuilding activities and examine the types of shelter built by Afghan refugees in Pakistan.
- iii) consider possible alternatives to the use of timber in housing, given that shortages have been identified as a constraint on rebuilding in some areas of Afghanistan.
- iv) prepare a work plan for activities in housing repair and reconstruction as necessary.

Objectives of the report

This report sets out to describe the activities of the mission in Pakistan and Afghanistan, and to provide some background to the issue of reconstruction. Part 1 sets out the terms of reference and objectives of the report. Part 2 outlines the principal housing types, materials for construction, building processes and available skills in the country. Included are some observations on construction activity in the refugee camps in Pakistan. Part 3 deals with the consequences of the war for rural housing, and the issue of repatriation of refugees. Part 4 covers the current options for assistance for returning families in replacing their homes, with specific recommendations for activities to promote self-built housing reconstruction in a number of areas. A number of annexes are attached at the end of the report. Annex 1 covers the mission itinerary, and Annex 2 lists those met by the mission members. Further annexes are mentioned in parts of the report to which they refer. A separate project revision covers mission activities in Kabul.



Provinces of Afghanistan

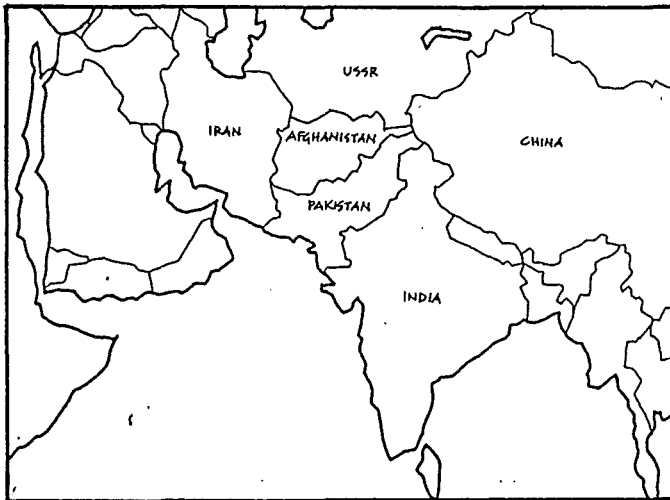
PART 2

Background

It would be beyond the scope of this report to attempt a complete profile of a devastated and divided country. Shortage of precise information about the rural areas of Afghanistan is legendary. Very few systematic surveys have been possible during the years of war. In the present circumstances, generalities about housing are of limited use, as conditions vary considerably from area to area. Of greater use are the experiences of Afghans themselves, or those who are working in the country. It has been said that the reality of Afghanistan and its people remains virtually inaccessible to the foreigner, and that its complexity defies definition, if not observation. The aim here is not to define, but rather to provide some background as the context for a discussion of rural housing in the country.

Afghanistan is bordered by Iran, the USSR, Pakistan and China. The country covers an area of 653,000 sq.kilometres. In 1982 the population of Afghanistan was estimated to be 16.8 million, with a further 4 million refugees in neighbouring countries.

Afghans are ethnically diverse, with Islam as their single binding force. The majority profess Sunni Islam as their faith, though there is a significant Shia minority in the central and western provinces. The population contains elements of Indo-European, Turkic and Central Asian

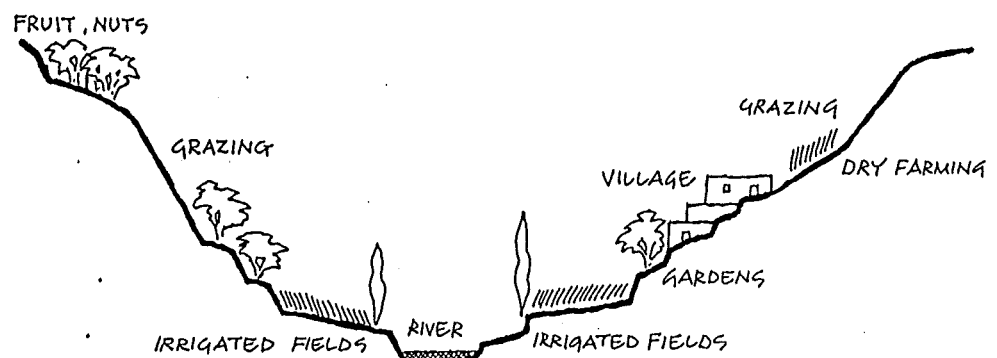


Mongol peoples. People of Pashtun ancestry, who inhabit the south and eastern parts, account for up to half the population. The Tadzhiks, who account for about a quarter of Afghans, live mostly in the north-east and west. Among other groups, the Uzbeks are mainly farmers in the north-east, while the Hazaras are nomads who inhabit the central highlands.

Afghanistan might be said to comprise three distinctive geographic regions. The northern plain is the major agricultural area, while the south-western plateau consists mainly of semi-desert. These regions are separated by the central highlands, which are an extension of the

Himalayan mountain chain. The north east part of the highlands includes the Hindu Kush range, which is seismically active. More than a dozen earthquakes of moderate to severe intensity have been recorded in the Kabul area this century.

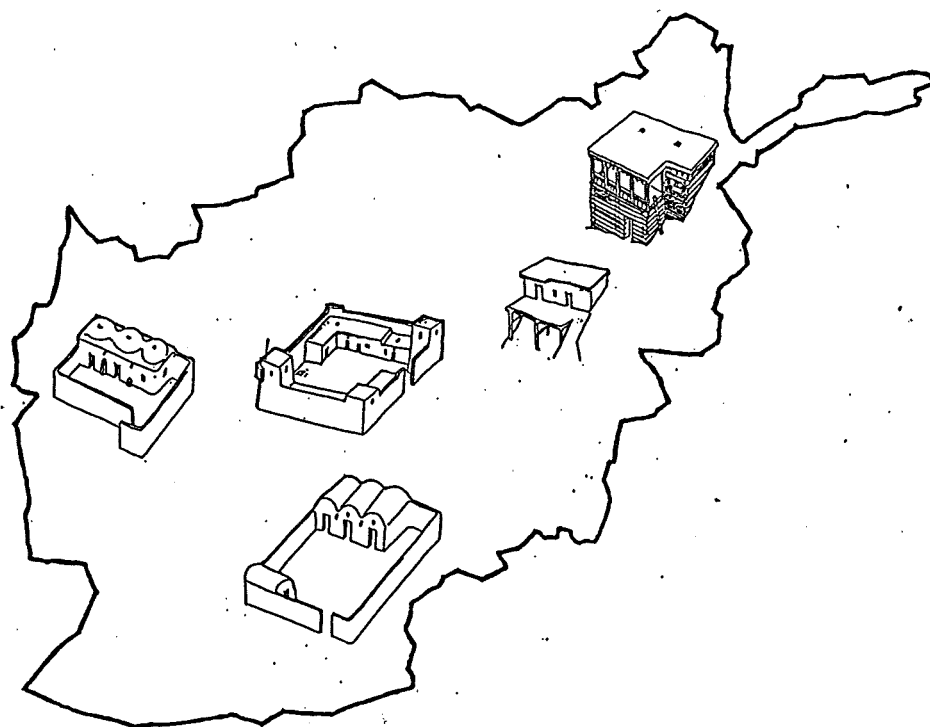
Before the war, 85% of the population lived in rural areas. The most common pattern of agricultural subsistence is the cultivation of irrigated valley bottoms with cereals. Four fifths of the country's wheat crop is grown in this way. The hillsides above the cultivated land are used as pasture for flocks, which are driven up from the valleys daily. Rain or snow-fed cultivation replaces irrigation in the more mountainous areas. Networks of underground water channels (*karez*) are maintained in the semi-desert areas of the south and west. Average population density is estimated at 26 people per sq. kilometre.



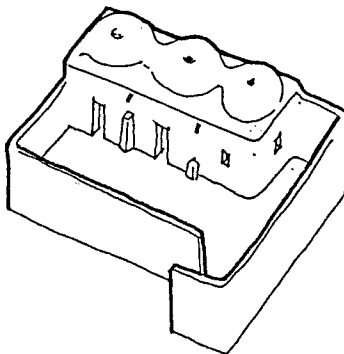
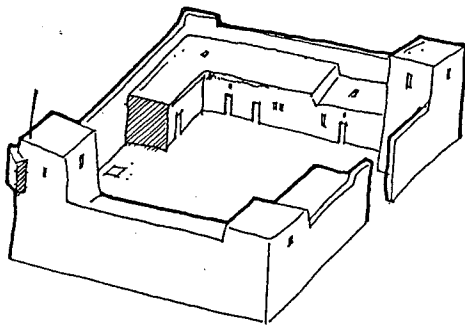
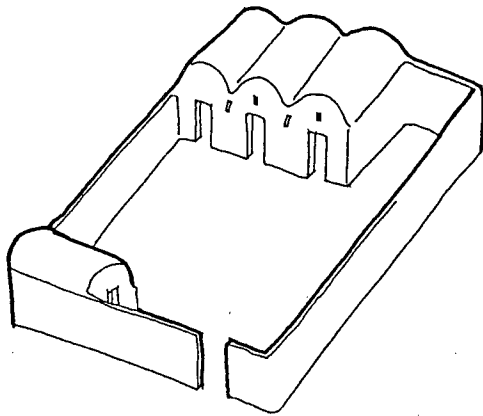
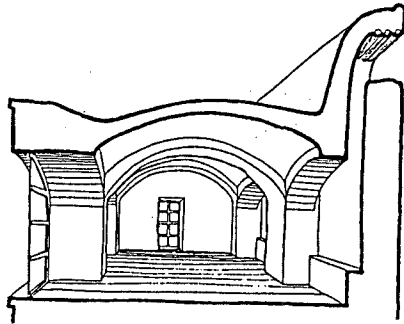
Typical land use in mountain valleys

Rural housing forms

The rural population of Afghanistan occupies a variety of different housing types, all using massive construction. Domes and vaults are common in semi-arid zones of the south and west, while flat roofs on timber prevail in the central and eastern highlands.

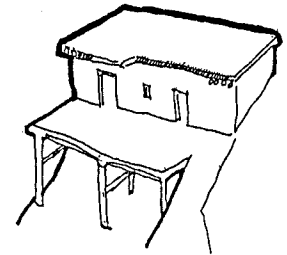


The principal materials used are earth, bricks, stone and timber. A dwelling comprises a number of adjacent rooms, which give onto an outdoor space, that is the scene of much of the domestic activity. Rural house forms may be broadly divided into two categories, those that follow an extended plan (usually on a single floor with an enclosed outdoor space) and those with more consolidated plans (often on more than one floor). The former type is generally seen in the plains of the south and west, and is built of earth and might have a domed or vaulted roof. The latter type is common in the mountainous north-east, is built of earth, stone and timber, and has a flat timber roof. Inhabited rooms rarely have a specific function, and the same space might be used for eating, sleeping, storage, entertaining or praying at different times. Family rooms are usually furnished with mattresses and cushions on the floor. All homes have space for the storage or drying of crops, and the stabling of animals.



A number of examples may illustrate the diversity of forms that exist within the basic types. In Herat and the north-west, homes are commonly organised with rooms ranged around an open court with a single entrance. A series of small brick domes, often with distinctive wind scoops (*badgir*), covers these spaces. The external walls of the home have few openings. In Kandahar, a more consolidated house plan is made possible by the use of larger domes separated by narrow brick vaults. Where only brick vaults are used for roofing, the home takes the form of a series of rectangular rooms ranged along one side of a walled compound (*havyeli*) with a single entrance. The door is often the only opening in vaulted rooms. Fortified homesteads (*qala*) in the central plains comprise several dwellings in a square walled enclosure, often with defensive towers (*burj*) at the corners. The *qala* is usually occupied by a single extended family. The compound may be up to 100 metres square, built of earth. Both domes or timber roofs are used.

In the eastern provinces of Laghman, Kunar and Badakshan two or three storey homes are built with stone and timber walls, partly dug into the steep valley sides. Flat roofs are supported by sawn timber posts. Lower rooms are used for storage, while the inhabited upper rooms are divided between a porch-like front space for use in the warm months, with stone-built rooms for winter use at the rear. This form allows for defence of the home, and there are few openings in the external walls. Access between levels is by means of trapdoors, with an external ladder (*zeena*) to the outside which can be drawn up for security. Elsewhere in the highland river valleys a secure house seems less important. Here, stone and earth are used to build a range of rooms along the slope, giving on to an outdoor space. This space may be the roof of the house below, or may be a platform on a timber structure, under which crops may be stored or animals kept.



Building materials

Earth, bricks (sun-dried or fired), stone and timber are the principal materials used for housing in rural areas.

Earth is at once the most widely used, the most readily available, and perhaps least expensive material for building in the country. The thickness of earth construction, and its low thermal conductivity ensure that homes are

well-insulated. Typically, a massive earth wall may take up to 9 hours to transmit a peak outdoor temperature to the interior. This is of particular value in areas with high diurnal temperature ranges, as is the case in much of Afghanistan.

Soils which contain clays are mixed with water to form a plastic mass that may be formed, and will harden and gain in compressive strength. In general, highly plastic clays have a high dry strength, but tend to crack from shrinkage when dried. Soils with a lower clay content dry more quickly and resist cracking, but have a lower dry strength.

The selection and use of soils has been developed by generations of Afghan builders in different ways. The most common uses of earth in building are:

- a) as a monolithic walling material (*pakhsa*). Earth is dug near the site, mixed with water, and laid by hand.
- b) mixed with water to form a mortar for brick or stone.
- c) as mud bricks (*khesht i kham*) which are formed in wooden moulds and dried in the sun. Bricks are used for walls, domes and vaults.
- d) as a surface plaster (*kahgel*) for walls and roofs, mixed with water, straw or plant fibres.

The manufacture and use of fired bricks (*khesht i pukhta*) is common near Kabul, Herat and Kandahar. Most production is labour-intensive, with mixing, forming and stacking done by hand. Some small-scale

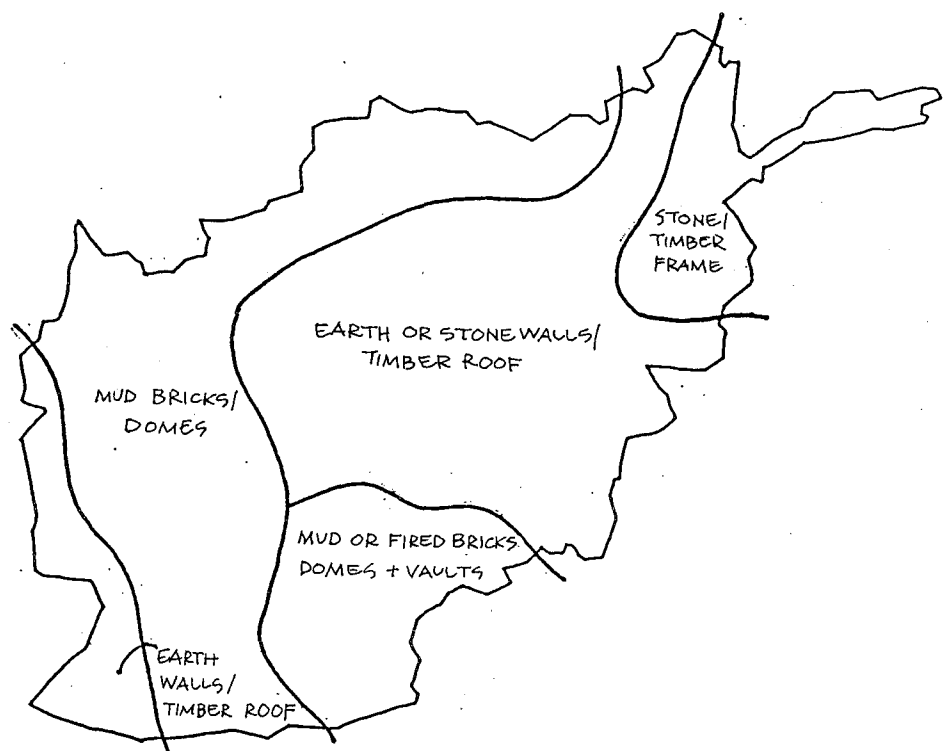


production takes place in clamps which burn wood, while larger permanent kilns are also used. Larger Bulls Trench type kilns, as well as mechanised plants with tunnel kilns on the outskirts of Kabul, are fuelled with coal.

Stone is available in many parts of the country, and is used as found or may be worked. Rubble stone is used in the foundations for earth walls. Both rubble and smooth river stones in mud mortar are used for walls of homes in the central highlands. Stone walls might be built up to about a metre above ground, with earth or mud bricks on top. Rough faced stonework is common in the east, where the cutting and dressing of stones is considered a skilled task. A mason (*sangtarash*) will be hired by the house-owner. Rubble stone is also used as infill between the horizontal wooden framing of houses in Kunar and Laghman.

The principal use for timber in rural homes is for roof beams and purlins. Softwoods used for roofing include poplar (*chinar*), willow (*baid*). Most farmers in the past planted some trees for their own building needs beside irrigation channels, and there was also some cultivation of trees for sale as timber. Builders may purchase an entire tree which they will cut up themselves. Typically, a good-sized tree will yield up to three beams of about 4 metres, as well as smaller timbers. Most of Afghanistan's forest cover, half of which is coniferous, is located close to the eastern frontier in the provinces of Kunar and Paktia. These communally-owned forests yield pines, cedars and evergreen oaks, some of which has traditionally been used for building in Laghman and Kunar. Other uses for timber in building include windows, shutters and doors. It is also widely used as a fuel for cooking and heating.

Annex 3 presents the costs of the principal building materials in some areas of the country.



Building methods

Building is primarily carried out by men, although women may be involved in some aspects of construction of their own homes. Many rural families build the greater part of their homes themselves, but might hire labourers to assist in parts of the construction. Skilled builders will be employed if brick-laying or carpentry work are involved. Such builders in the towns generally rely on construction work for their livelihood, while those in rural areas may also own land and farm. There is, on the whole, little status attached to construction work, even for skilled artisans. Casual unskilled labour in agriculture and building is an important source of income, in cash or kind, for many villagers. Annex 4 lists some typical labour costs for rural building.

It is not clear to what extent the shared-labour system (that is said to apply to agriculture) is used for construction. It is common for houses to be built in stages, sometimes over a period of several years, as needs arise and resources are available. The building season in most areas of the country is limited by the cold winters, and construction generally takes place between March and September.

The construction process begins with digging of shallow trenches for foundations of rubble stone. In the semi-arid areas in the south and west, foundations are not common, and earth walls are built directly on the ground. Elsewhere, stone footings help to protect the base of earth or brick walls from damage.



Material for the construction of earth walls is dug near the site of the proposed building, mixed with water and treading to the correct consistency before use. The mud mix is laid by hand to form walls of up to 65 cm thick, in rises (*tardey*) of about 60 cm. The surface of the walls is shaped by hand and smoothed with a flat wooden trowel. Two men are said to be able to lay about 12 metres of a single rise in a day. Each completed rise is left to dry for at least a day. The builder will stand on the dry wall-head to form the next layer. Earth walling is not felt to require specialist skills, and may be carried out by the house-owner and his family. The task of making sun-dried bricks is carried out by unskilled labour, or by the house-owner and his family. Bricks are usually made for a specific job, close to the construction site, for they are difficult to transport intact. The material is prepared in the same way as for earth walling. The wet mix is pressed into simple wooden moulds (*qaleb*), usually holding four bricks. The wet bricks are emptied from the mould on to the ground, where they are left to dry in the sun. Typical sizes are about 20cm x 20cm x 5cm and 20cm x 10cm x 8cm. Both flat square bricks and rectangular bricks are used for vaults and walls, depending on the local technique.

The laying of sun-dried bricks for walling is undertaken by a semi-skilled brick-layer (*gelkar*) who will be hired by the day or for an entire job. Sun-dried bricks are commonly used for the internal load-bearing walls of homes, with external walls of earth. For single storey homes, brick walls are about 40cm thick. Walls are always finished with a mud plaster.

Domes of sun-dried bricks are constructed by skilled brick-layers (*bina*). In the southern provinces, rectangular spaces may be roofed with elongated domes (*gumbad*). Their catenary shape makes good use of the compressive strength of the bricks and avoids the need for support during construction. Brick courses are built up from the flat wall-head at either end of a rectangular room, to gradually form the arched shape of a vault. Each arched course of bricks leans towards the end wall, while the wet mud mortar keeps newly-laid bricks in place. Once the two vault shapes join at their base, the space between is filled with horizontal courses of brick, laid as if for a dome. Square spaces are covered by hemispherical domes, with a variety of brick patterns used.

The mixing of earth, forming and drying of clay bricks before firing is carried out in much the same way as for sun-dried bricks. Typical brick sizes are about 20cm x 20cm x 5cm and 20cm x 10cm x 5cm. Fired bricks are mainly used with mud mortar, although lime mortar or gypsum are used for domes and vaults in some parts. Construction with fired bricks requires special skills, which are acquired through an apprenticeship of several years to an experienced brick-layer.

Fired bricks are used with mud mortar on rubble stone foundations for walling. Brick walls supporting flat roofs are common in towns, but in rural areas they are mainly used to support domes or vaults. In the area around Herat, piers of about 80cm square are built to form 3 metre square bays. Arches are raised between the piers, to support the circumference of a dome. This is formed from concentric rings of bricks, laid

at an angle in mud mortar. This technique avoids any need for support for the dome during construction.

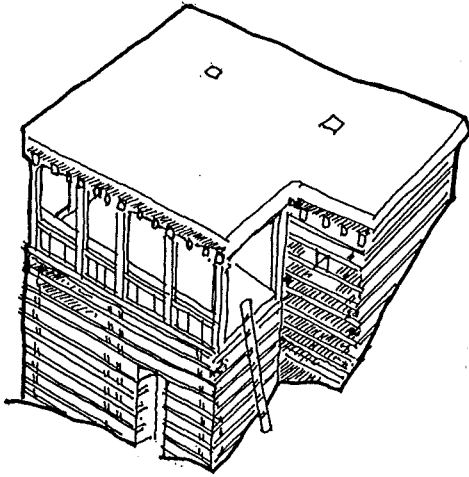
Fired bricks are also used to construct vaults. In the Kandahar area, shallow vaults (*zarbay*) are formed from bricks laid end to end in lime mortar or gypsum to span between earth walls. The fragile vault is covered with a layer of mud bricks for protection and insulation.

Afghan builders appear to be aware of the limitations and possible weaknesses of dome and vault construction. Such forms are not common in those parts of the country that are most prone to damaging earthquakes. In Kandahar, fired brick walls are said to be strengthened with horizontal timbers built in to the walls at the base of the dome. In other areas, timber poles are used to span across vaulted rooms, in order to brace the supporting walls. Domes and vaults are generally felt to be too weak to be used in areas with heavy snowfall. In all areas, snow is cleared from roofs after each fall.

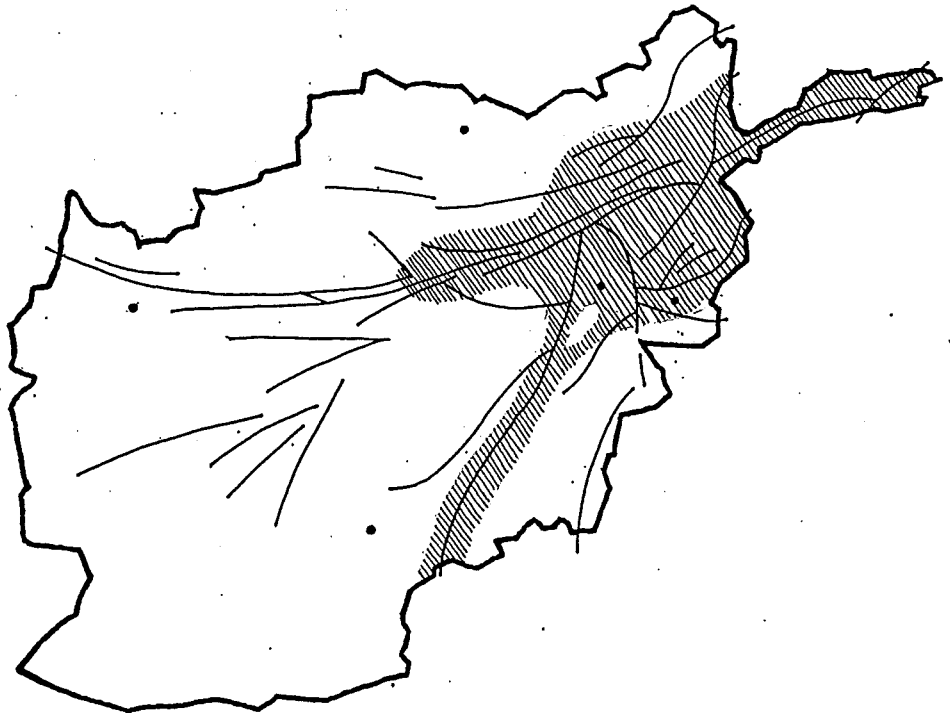
All villagers are aware of vulnerability of traditional construction to the weather. Parapets of mud and straw plaster laid on projecting pieces of timber or brushwood are used to protect wall-heads in some areas. Elsewhere, fired bricks or flat stones may be used as parapets. Plasters for external walls and roofs are made of clayey soil mixed with straw, dung or plant fibres.



The construction of flat timber roofs is often carried out by the owner or hired labour. The removal of branches is the only work needed to prepare the timber for use in most cases. Room sizes are to some extent determined by the length of available timber. Most commonly, beams of about 4 metres are used. The main beams are built directly into the earth or stone wall-head at about 80cm centres. Smaller pieces of timber (*wasak*) or brushwood (*ghaz*) are used to span between the beams and act as a parapet on the external walls. A layer of wet earth is laid on top of this, and built up to a depth of about 35cm. A water-resistant plaster of mud and straw is applied to the whole roof surface, and built up to have a slope in order to shed rainwater.



In the earthquake-prone eastern highlands, homes of several storeys are common, with walls made of a frame of sawn timbers. These are laid horizontally, and lapped and joined at the corners. An infill of stones and mud is laid between the timber framing. Specialist carpenters (*najjar*) are required to prepare the timber and erect the walls and roof. Vertical posts support the timber structure of the roof, which is built to allow for a central opening for the hearth.

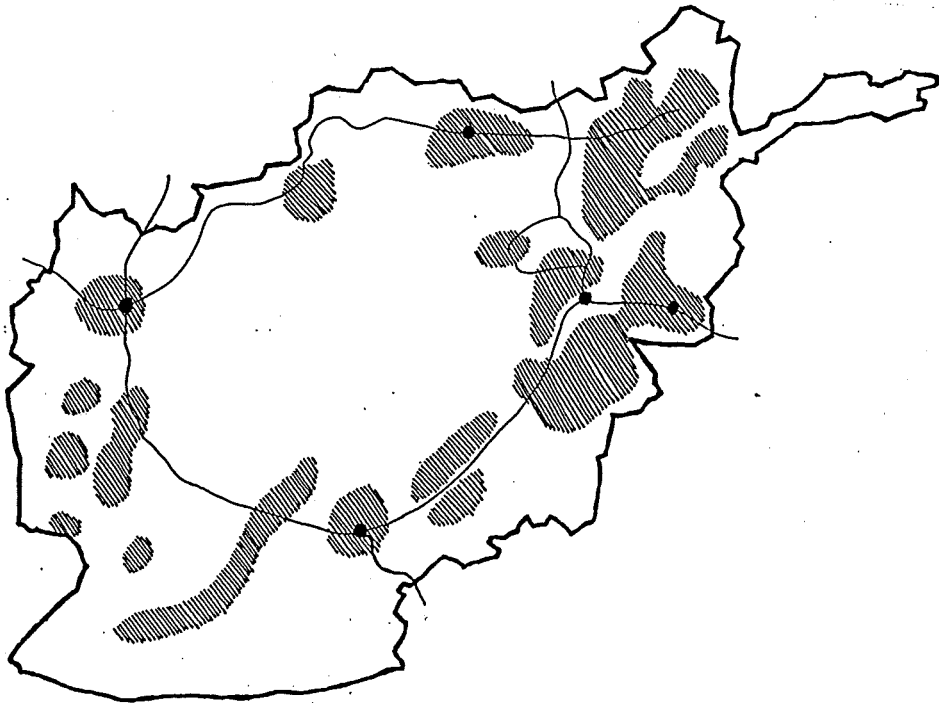


Principle zones of earthquake activity, and faults

PART 3

The consequences of the war

The war has devastated the country, and been the main factor of social change, partly through migration of refugees and forced urbanization of many communities. Four million people have fled from Afghanistan since the conflict began ten years ago. A further 1.5 million have abandoned their homes to move to areas within the country where they feel more secure. Up to a million Afghans are said to have lost their lives in the fighting.



Principal areas of destruction in the country

Much of the fighting of the past ten years has taken place in rural areas, where resistance to the government has been most enduring. It has been estimated that agricultural production has been reduced to a third of pre-war levels. Years of conflict has started a cycle of impoverishment, which has affected all aspects of village life. The fighting has occupied many able-bodied men, and prevented members of their families from farming. Irrigation systems, which are the basis for most agricultural subsistence, have run dry through neglect in many areas. Land has gone out of cultivation, while improved seed and fertiliser have not been available. The basis for a rural livelihood has been denied many families, who had little choice but to flee from their homes. The traditional self-reliance of village communities has been replaced by exile and dependence for many.



Damaged bazaar in Arghestan, Kandahar

Those who have fled within the country have often headed for urban areas. The population of Mazar and Jalalabad has increased with the war, but is now said to be declining. Kabul, which had a population of 850,000 in 1979, was estimated to have 1.3 million inhabitants in 1986, and up to 2.2 million in 1989. In some cases pro-resistance populations have fled from towns and cities in government hands (Herat, Farah) with the result that the population has decreased.

The impact of this on rural housing has been serious. With up to a third of the 22,000 villages in the country said to be affected, at least four million people will be without adequate shelter. Up to a million families will need to build some form of replacement housing, with many more having to undertake repair work.

Systematic destruction of homes has been limited to areas near sites of strategic importance, such as towns, military installations, or roads. Where buildings or trees could have provided cover, they have been razed or destroyed by fire. Eastern and northern provinces, which have seen the fiercest fighting, have suffered particularly. Annex 5 presents general information that is available on the destruction of housing, by province,



Damaged housing in Arghestan, Kandahar

As well as hostilities on the ground, attack from the air has caused widespread de-population of parts of the countryside. Many communities fled for fear of bombardment, and empty villages are a common sight. Large parts of the countryside have been sown with mines. In some parts, the stripping of materials from houses in abandoned villages has been reported. Timber beams, as well as window and door frames have been taken, usually for firewood. In villages where some of the population has remained, this pillaging would appear to have been less widespread. Some sources speak of the occupation of empty houses by those who have had their homes destroyed.

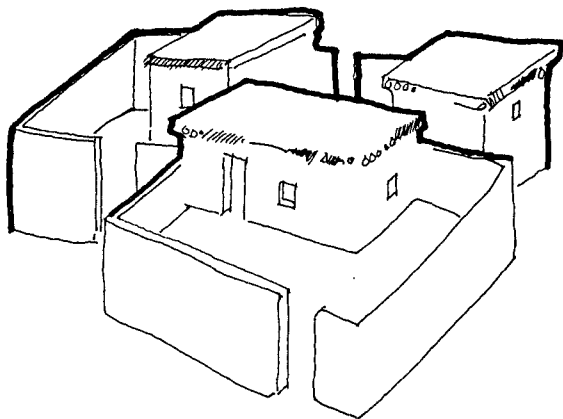
The present needs for replacement housing result principally from the deterioration of abandoned homes. Traditional construction has a limited life, and needs constant maintenance. Homes that have been empty for a number of years have soon deteriorated. Roofs have leaked and become waterlogged, resulting in structural damage and eventual collapse. Without the protection of the roof, walls are vulnerable to wind and rain and soon crumble.

Due to the war, little new housing has been built in many parts of the country for the past ten years. Most able-bodied men have been involved in the fighting or have become refugees. There have been few prospects for those skilled builders who were able to remain in their vil-

Some refugee communities from a single area or village have been able to settle together in Pakistan. The camp of Surkhab in Baluchistan regroups around 120,000 people, from areas close to Kandahar city, in a number of contiguous villages.

The notion of village social organisation has, however, changed for most communities. It is said that traditional relationships that existed within the village community have been disrupted by the war and relocation. The power of the customary leaders has been affected, with the emergence of different groups of influence (such as camp committees and political parties), together with new structures for decision-making. These changes are in response to a situation of dependence, where there is a great deal at stake politically and economically. This may have had a profound impact on the process of resettlement.

While most families have the skills to provide themselves with some form of permanent shelter, this may involve a considerable investment in materials. First they will consolidate themselves by constructing walls around their tent. After this, a shelter of brushwood on timber poles may be erected, to be followed by a single room with earth walls. The process is usually gradual. There may be an unwillingness to spend money on a house when the family is unsure for how long they will remain refugees. Some of the settlement outside the camps is said to be allowed on the understanding that refugee-built homes will be left intact when the occupants return to Afghanistan. This means that some families will be unable to recoup their investment in materials, or carry elements (such as timber beams) back for reconstruction in their village.



Most of the permanent shelter built by refugees uses earth walling with flat timber roofs. Two or three rooms, each of about 6 metres by 4 metres, are built around a walled compound. In many camps, the pattern of settlement is much denser than it would be in a village. In these cases, homes are always built on a single storey to avoid the outdoor spaces being overlooked. Rural refugee settlements are more dispersed, and families may build homes on two storeys, with bigger compounds to allow for some cultivation. Some case studies from interviews with refugee families in North West Frontier Province are presented in Annex 6.

The first to return to their homes in Afghanistan have been those who moved to safer areas within the country during the war. Latterly, members of refugee families in Pakistan have been able to return periodically to their villages. While hostilities continue, there has been less fighting in the countryside in the past year, and people feel less at risk from attack from the air. Refugees may go to their villages in May to harvest winter wheat and plant vegetables. They return in September or October to sow winter wheat and harvest the summer vegetables. Some members of the family usually stay behind in Pakistan. It is increasingly common for members of the family to spend the entire summer in their villages. They are compelled to return to Pakistan, because they do not

lages to earn money. Many are said to have sought work in the towns where possible. The war has also affected the system of builder apprenticeship, and prevented younger men, who may have had an adolescence of fighting, from gaining useful building skills.

The situation in most rural areas has reduced the demand for traditional construction materials, for only limited new building or repair has been possible. The supply of some materials has clearly not been affected by the war. Earth and stone continue to be readily available, where there is labour to dig or extract them. The manufacture of fired bricks is said to have been reduced, and is limited now to urban areas.

Timber is said to be in short supply in those parts where some reconstruction has begun, particularly in the eastern provinces. The war has disrupted the planting of trees suitable for structural timber in many parts. Elsewhere, there are said to be cases where surviving poplar trees are cut and transported across the frontier to Pakistan, where they fetch better prices. There has been uncontrolled felling in the forests of Paktia and Kunar to provide both hardwoods and softwoods for sale outside the country. Quantities of valuable timber, especially deodar, from these forests is stockpiled on the Pakistani side of the frontier. Pakistan's natural forests have been decimated by illegal cutting, and there are strict controls to prevent further damage. High prices are paid for all types of timber, especially hardwoods. This increases pressure on the Afghan forests, where control is impossible. As well as timber for building, the cutting of firewood has reduced tree cover, which is not being renewed in many areas.

Transport of goods and materials within the country has been affected by the war. The main highways are damaged or are not secure for use, and secondary roads have deteriorated from neglect. Unmade roads have become the main routes for the considerable traffic of goods and materials from Pakistan. Poor roads are not the only obstacle to transport. Goods from outside need to be loaded in to smaller Afghan trucks at the frontier. It is common for consignments to be unloaded and re-loaded on to other vehicles several times on a trip, on the orders of the groups who control the areas through which the truck travels. There are frequent reports of entire loads or a proportion of the goods being seized before they reach their destination.

Adapting to exile

Shelter is a priority for all Afghan families who flee their homes and become refugees. Those who register as refugees in Pakistan are settled in camps, where they are provided with tents. There is also considerable settlement outside the camps, in the tribal areas in North West Frontier Province and Baluchistan, both of which adjoin the frontier with Afghanistan. Exile has meant urbanization for many refugees, who are forced to live in an urban atmosphere. Refugee "villages" bear little resemblance to the typical Afghan village of 500 to 1000 persons. The stated limit of refugee settlements to 5000 inhabitants is in reality often exceeded, with some comprising 20,000 people (Zangal Patai, Malakand Agency).

The potential for reconstruction

a) Return

While the needs for replacement housing in rural Afghanistan will be immense, the process of reconstruction will depend on the return of villagers to settle. Predictions that the refugees will return to their villages en masse have not been fulfilled. It is now widely acknowledged that the process will be gradual.

The reason behind the limited scale of resettlement in some areas may have little to do with decisions made by individual families. The obstacles facing those who wish to return are formidable. Permission to cross the frontier from camps in Baluchistan to resettle is said to be frequently refused. In the Kandahar area, those who do manage to cross are said to be discouraged from re-establishing themselves by some local commanders, even in those areas that have seen little recent fighting. A precondition for return must be a willingness, on the part of local authorities and the political organisations that control the refugee communities, to permit families to end their exile.

After this, different factors will influence individual decisions to resettle. Unless families can feel safe, and be certain that they can subsist in their villages and have basic shelter, they are unlikely to set out on the journey home. The availability of assistance for reconstruction at home may also affect the decision to leave Pakistan, where many refugees are dependent upon relief organisations for rations.

Given the circumstances that allow significant returns, the potential for reconstruction in any area will be determined by:

- i) the number of homes that need replacement.
- ii) the size of the returning workforce.
- iii) the availability of materials.

b) Housing needs

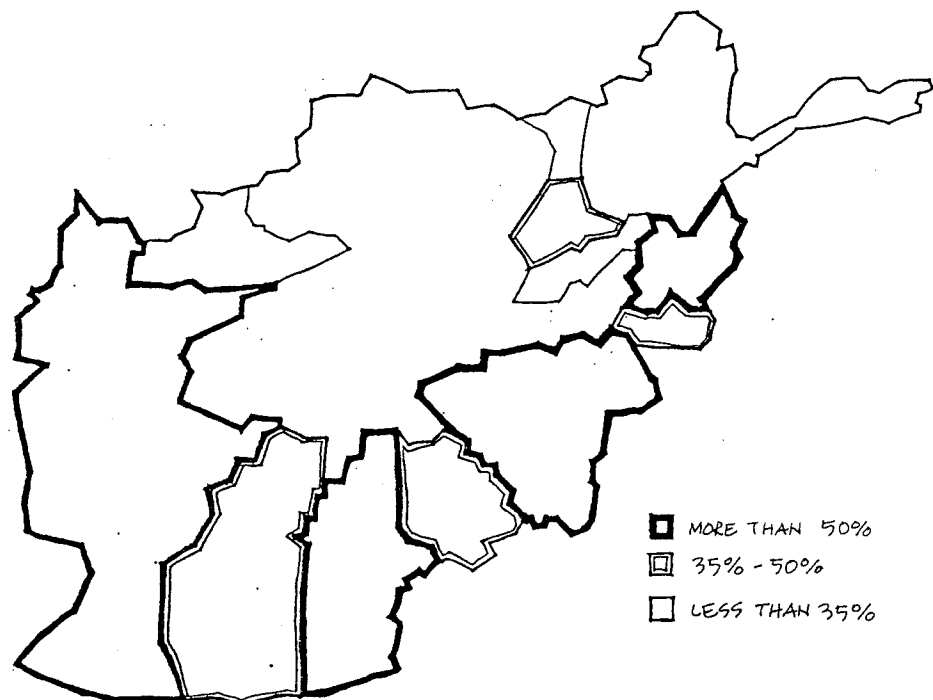
It is estimated that at least a million families will need some form of replacement housing on their return. For the present purposes, the emphasis should be on basic permanent shelter, rather than the full replacement of pre-war homes. Exact requirements will differ between areas, but general needs are clearly for a base from which a family might re-establish itself.

Reports from some areas close to the frontier speak of an increase in building activity in the past year. Families are said to be establishing themselves in stages. For shelter, the first stage is often the construction of a single room of about 6 metres by 4 metres, often with a walled outdoor space. Walling for such a room, built of earth or stone, takes 3 men about 3 days to construct. Repair of damaged homes involves the restoration of one or two rooms to a habitable state.

have adequate shelter to spend the winter in the village, and do not yet feel secure enough to re-build.

The experiences of many refugee families outside the country are likely to have an effect on the nature of reconstruction at home. Many able-bodied Afghan men who settle near the urban areas in Pakistan find work on construction sites. This has meant that many have gained skills in building, especially walling with fired bricks. It is possible that builders exposed to new materials and methods may alter their attitudes to traditional techniques. Surveys amongst refugees, however, suggest that most intend to use traditional materials and methods in reconstructing their homes. The GTZ training project in Peshawar has found that eight out of ten of its trainees expressed a wish to build with local techniques when they returned to their homes.

It is difficult to predict the impact that changed physical circumstances might have on attitudes to traditional housing, when refugees return to their villages. Interviews with refugee families during the mission suggest that many people may wish to improve their living conditions on return, principally by building a bigger home or having electricity supply to their villages. There is clearly potential for an improvement for housing conditions in many cases. The reality, however, is that few may be able to build more than basic shelter until they are established again in their villages.



numbers of refugees return. It is possible that a shortage of skilled builders may result in some change of techniques. For example, where brick-layers for domes are not available, the use of timber may increase, for this does not require special skills. This change may increase the demand for building timber, and put more pressure on already scarce resources.

d) Materials

Materials for the limited amount of construction that is under way at present are usually available locally. Timber is not available in all parts, and may need to be bought from outside the area. While there are areas with a surplus of building timber in the country, even at this early stage of reconstruction, shortages (particularly in the east) are reported. De-forestation in some of the mountainous areas is said to be well advanced, but this is more likely to be the result of felling for export to Pakistan. The long-term solution must be re-planting.

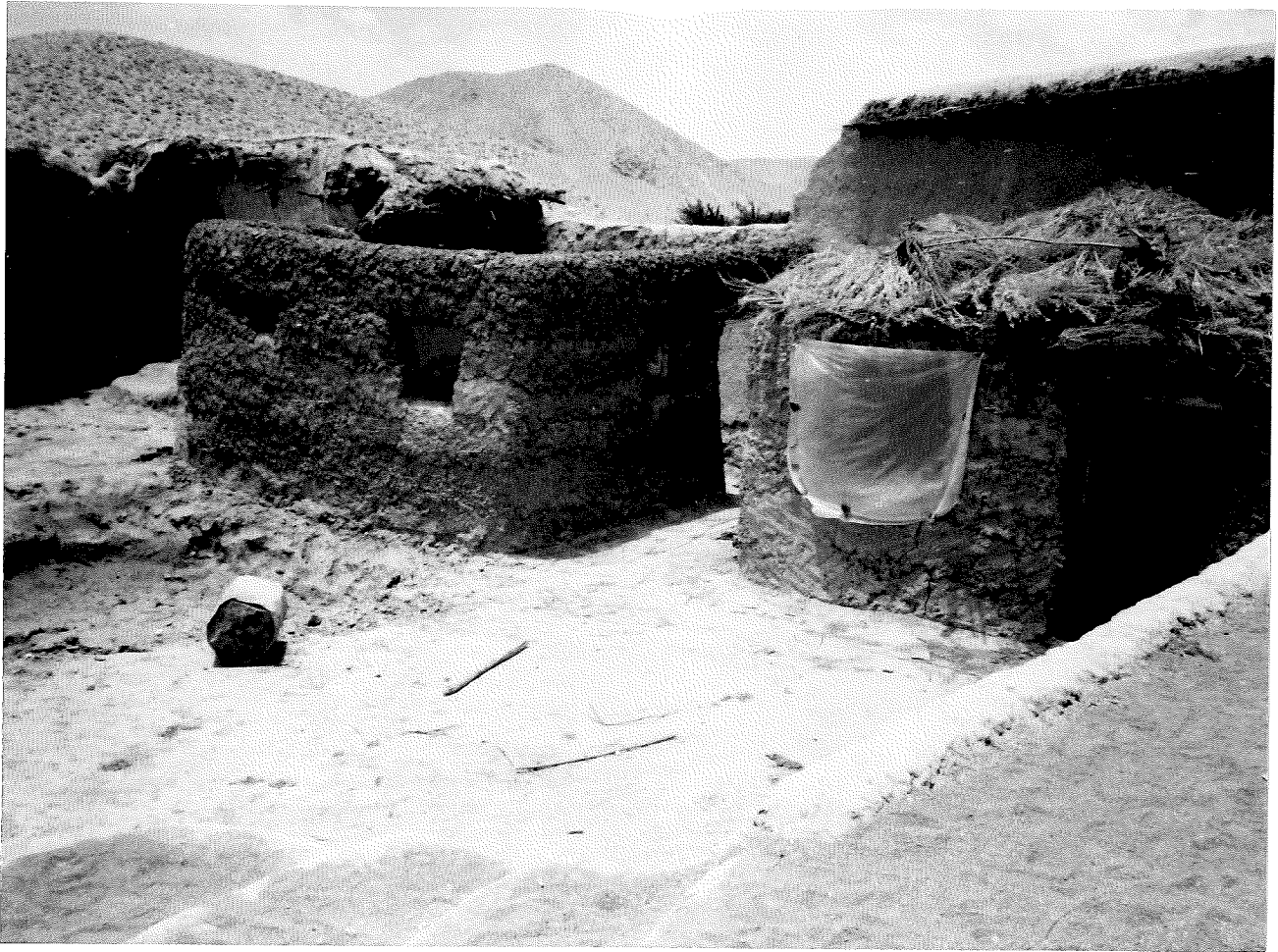
While the import of timber for building may be appropriate in the short term, in some cases, alternatives to its use should also be considered. The high cost of transport within the country must be taken in to account in decisions to import materials or elements, and will also affect the distribution of locally manufactured components. Annex 7 lists some indicative costs for cross-border transport. The considerable risks attached to transport have been described above.

Lightweight roofs, as an alternative to massive traditional construction, are clearly not appropriate for permanent shelter in the climate of Afghanistan. The need is for alternative structural elements that builders might use to support the traditional earth roof. A number of solutions may be considered, as a means of reducing the use of timber, or replacing it completely. The principal materials that might be used are bricks (in the form of domes or vaults), steel and cement or concrete.

Brick domes and vaults are already widely used in parts of the country. To propose the universal use of this technique to replace the use of timber would be unrealistic. Skills for dome building are confined to those areas where such forms are used. There are, however, areas where both flat timber and domed or vaulted roofs are common. There is a case for encouraging the use of bricks in these areas, to reduce the pressure on the available stocks of timber. Where there are shortages of brick-laying skills, these might be developed through training, which should also cover techniques to improve the strength of brick domes.

A combined timber and brick system of roofing is seen in parts of the southern provinces, particularly near Kandahar. This significantly reduces the amount of wood needed for a roof, by using shallow vaults of fired brick between beams, which are placed at 1.2 metre centres. Earth is laid on top of this structure to form a flat upper surface.

Steel is not generally available in rural areas of Afghanistan. Rolled steel joists (RSJ) are manufactured in Pakistan, Iran and the USSR and could be transported by road to areas of Afghanistan where their use



Rooms built by recently returned families, Maiwand, Kandahar

c) Labour

The availability of labour, which may affect the potential for reconstruction, differs from area to area. Farmers are the main employers at present. In some areas there is said to be a surplus of unskilled labour, where there is not enough land under cultivation to sustain everyone in employment. Elsewhere, men are said to be travelling to areas where labour is in demand. The current labour market, however, has limited relevance, because a significant return of refugee families will mean a greater number of able-bodied men who can build for themselves or others. Many families will have at least one member who is able to undertake some of the building work for his home.

It seems unlikely that a gradual process of reconstruction will cause an absolute shortage of unskilled workers across the country. Many returnees will need to earn cash to finance their resettlement, and are likely to be able to travel to areas of demand. Extensive building reconstruction in a single season may make labour more expensive in some areas. At present, unskilled labour rates increase from 600 to 1000 Afghanis a day during the autumn harvest.

Skilled workers will also be required for reconstruction, particularly in areas where vaults and domes are common. While there are said to be some shortages of skills at present, this is likely to change when larger

was felt to be appropriate. RSJ's of up to 7 metres should be transportable on the types of trucks that are currently able to negotiate the roads of Afghanistan. They could be used to replace the main timber beams for flat-roofed homes, with a traditional cover of earth laid over small purlins and brushwood. Alternatively, shallow vaults or jack arches could be constructed between RSJ's laid at centres of up to 1.2 metres. This is a technique that is said to be widely practised for roofing homes in Iran. It is a technique that will require skills in brick-laying for the arches. The structure could be covered with earth layer, as with traditional roofs.

Both cement and steel for the manufacture of reinforced concrete roofing elements are likely to have to be imported from Pakistan. Cement from plants in government-controlled parts of Afghanistan (Kabul, Baghram) is sometimes available in nearby rural areas. Most requirements are, however, met by supplies from Pakistan. Reinforcing steel, used mainly now for bridge repairs or culverts, is brought from Pakistan.

The small-scale manufacture of reinforced concrete beams and slabs, as well as components for precast domes, has been developed by groups working with refugees in Pakistan. Precast domes have little relevance in a context where brick domes can be constructed with local materials and skills. Beams and slabs could be used to replace timber in flat roofs. Beams measure up to 7 metres long, and slabs are 1.8 by 0.75 metres. Three concrete beams may replace eight timber joists used in a typical room. The use of flat slabs between beams can avoid the need for smaller timbers, and they may also be used as lintels and parapets.

Precast components are currently produced for the camp populations, and in some cases have been transported for use in Afghanistan. The finished components are sold at subsidized prices, which would tend to suggest that they are too expensive for many refugees. A roof of beams and slabs would cost about 10% more than a typical timber roof. Local manufacture of elements is feasible with trained staff. Costs of transport (of raw materials or finished components) to Afghanistan would mean that concrete roofing would increase the cost of a home significantly. It would appear that subsidies would be inevitable if reinforced concrete is to be an attractive alternative to timber for roofing.

The potential for timber shortages is not only confined to the main beams for roofing, and alternatives to the use of small timber purlins between beams also needs to be considered. Corrugated iron sheeting could be used to span over the main beams of a room. The relative strength of the sheets may allow for longer spans, so that beams could be more widely spaced. A conventional earth finish could be laid over the iron sheets. Corrugated iron in contact with soil will have a limited life, which might be prolonged by the use of plastic sheeting under the earth.

Timber is also widely used for doors and shutters for houses. Small sections of corrugated iron sheeting have been seen used on timber frames to act as shutters or doors for rural homes, reducing the amount of timber needed.

PART 4

The management of reconstruction

The process of reconstruction should be managed by the Afghans themselves. They are knowledgeable about their housing needs and could contribute to the structuring of assistance programmes. Groups working in the country have looked for local help in decision-making about projects that aim to address local conditions. They found that civilian administration of communities in the rural areas is fragmented, with no single authority. The allocation of assistance has often been difficult in the absence of any effective structure.

Some areas have a local *shura* or council, made up of both civilian and military members. The need for military co-ordination has been the catalyst for the formation of most councils. While there have traditionally been local consultative bodies in rural areas, their authority was based on custom. During the war the distinction between a civilian and military society has become blurred. As the principal recipients of financial support, the military commanders are in a position to control activities and decision-making in their area. While there must be doubts about how representative these structures may be, they are often the only authority who can offer the necessary security to assist in resettlement.

The organisation of *shuras* specifically to manage reconstruction has been a more recent phenomenon, often initiated by organisations providing assistance as a mechanism through which they can conduct their work. Reconstruction *shuras* have no history as legitimate institutions in the community, and have to rely on the sanction of the commander to enforce decisions. But the tradition of consultative processes is strong enough to ensure that the *shura* mechanism can handle the issues that the task of reconstruction raises.

An important function of *shuras* is their potential for generating a consensus about reconstruction priorities. They may also communicate information about available resources or recommend skilled workers. While donors may establish criteria as to who beneficiaries of assistance will be, the allocation of resources is always left to the *shura*. Acceptance of their decisions is not guaranteed, because they are not guided by any well-defined body of customary law, as was the case in the past. At best they can be expected to reflect the level of discord amongst groups in the community.

The last year has also seen the emergence of provincial reconstruction committees or offices, which aim to co-ordinate activities in an area. These groups attempt to fill some of the functions of a government, although it is not always clear who they represent. They often have links with the Ministry of Reconstruction in the Interim Government. There is outside assistance channeled through some of the regional or provincial committees, which often have technically-skilled Afghans on their staff. Such large groupings may form the basis for genuine national counterpart organisations in the future.

There are a number of non-governmental organisations (NGO's) and others involved in cross-border activities, aimed at assisting in the rehabilitation of rural areas of the country. Most activity has to date concentrated on agriculture and health. Activities are co-ordinated through a number of inter-agency groups, the Peshawar-based Agency Co-ordinating Body for Afghan Relief (ACBAR), the Quetta-based South West Afghanistan Body for Agency Co-ordination (SWABAC) and the Islamic Co-ordinating Council (ICC).

There are precedents for support from the UN system to NGO's in order to carry out cross-border work in Afghanistan. It is widely acknowledged that NGO's will continue to play an important role in the rehabilitation process in areas where outside assistance may be required. At present NGO's carry out projects within Afghanistan as subcontractors to UN agencies, (principally UNHCR). A UNDP project has been established in Peshawar to provide technical and administrative support for Pakistan-based NGO's working in rehabilitation of agriculture and health in Afghanistan. A UNDP consultant has been assigned to a multi-agency group of Afghan engineers (START) assigned to investigate infrastructure repair. In order to improve the effectiveness of supply operations within Afghanistan, United Nations Logistic and Transport Operations (UNILOG) has been established to assist NGO's and other groups working in the country and to co-ordinate supply services.

NGO's have developed contacts with rural communities over a number of years. Of these groups, about six have undertaken the re-building and repair of houses in areas where this has been felt to be a priority.

Approaches to reconstruction and techniques have varied, but all have been carried out by local builders, usually with available materials. A further three organisations are active in builder training for Afghans in Pakistan, to help develop skills for reconstruction.

- 1) **AfghanAid** (Peshawar) have experience in many parts of rural Afghanistan, and in 1988 assisted in re-building homes in the Achin district of Nangahar province. The aim of the project was to assist families who had remained in the area during the war, but needed housing. By helping some families to establish themselves, the *shura* wished to encourage others to return. 42 homes were repaired or re-built by families nominated by the local shura. Materials used were earth, stone and timber bought locally. Cash was provided for some materials and labour, to cover a maximum of 75% of the building costs.
- 2) **The Norwegian Committee for Afghanistan** (Peshawar) has assisted in some re-building through commanders in an area of Paktika province. Building was of earth, with labour paid as part of a food-for-work programme. Houses cost up to 250,000 Afghani each. The project was considered too expensive to repeat.
- 3) **World Vision International** (Peshawar) are currently providing assistance for reconstruction in the Chamkani district of Paktia

province. They have undertaken an extensive survey of damage in 29 villages. There has been widespread damage to homes, and resettlement is beginning. Timber is in short supply in the area, and some imported precast concrete beams have been used. The villages are close to the frontier with Pakistan. Reconstruction work is carried out directly with the villages concerned, with limited involvement of the local shura. Local masons have been hired by the projects, which also provides roofing materials.

- 4) **Shelter Now International (SNI)** (Pesharwar) and **Mercy Corps International** (Quetta) have a number of different projects in the southern provinces. Beams, roofing slabs, and components for precast domes are made in a factory established by SNI near Pesharwar. Building elements are supplied to refugee camps and some cross-border projects. Afghans are employed in the plant, and trained in manufacturing techniques and use of the elements. The organisations have plans for similar plants inside Afghanistan in the future.
- 5) **Human Concern International** (Pesharwar) is active in several eastern provinces of Afghanistan. They have conducted a damage survey in areas south of Kabul in Logar province, and provided cash for the purchase of local wood and stone for reconstruction. Local labour has been hired on a food-for-work basis. There are plans to assist in the reconstruction of up to 1000 homes in Ghazni province, to be organised through the local commander. The project engineers are considering the use of steel beams for roofing if timber is scarce.
- 6) **The Danish Committee for Afghanistan** (Pesharwar) which has extensive experience in reconstruction of schools and clinics in Afghanistan, plans to become involved in the re-building of houses. This has been identified as a priority, and a precondition to resettlement in some of the areas in which they work. They see timber shortages in Paktia as a possible constraint to re-building, and plan to develop alternatives to its use.
- 7) **GTZ**, a German governmental development organisation, operates 12 technical training centres in North West Frontier Province. Up to 70% of trainees are Afghans, on a variety of trade-related courses. Basic training is offered in earth construction, brick masonry and stone on a 3-month course. There are longer practical training courses in masonry or carpentry. Masonry includes dome and vault building, repair and maintenance. More than two thirds of trainees have found work in Pakistan or Afghanistan since graduating. GTZ has plans to extend its training activities for Afghans in 1989.
- 8) **GTZ** also supports a **Domestic Energy Saving Project** in Pesharwar, which promotes alternatives to timber use. Activities include apprenticeship training (in the construction of mud-brick domes and vaults) for young men from the refugee camps. 800 domes, over homes and schools, have been built in a number of camps. The project plans to extend its training activities to offer longer courses for both builders and engineers, and begin research in to low cost

earth construction. When feasible, this part of the project will be moved to Afghanistan.

- 9) **The International Labour Organisation (ILO)**, a UN agency, supports six basic training centres in camps in Baluchistan. The training is intended to develop skills rather than provide refugees with a trade. The 3-month courses include carpentry and brick-laying. The ILO is prepared to tailor further courses to suit specific needs for projects that may involve refugees.

Other groups with cross-border experience who are likely to become involved in housing reconstruction are:

- 10) **Engineering Services for Afghan Reconstruction (ESAR)**, an all Afghan group of engineers who have worked with NGO's.
- 11) **Integrated Development Group**, an Afghan NGO committed to an integrated approach to village development, covering agriculture, housing, water, health and education.
- 12) **International Rescue Committee**, a group who work cross-border in health, training, agriculture and irrigation. IRC also operate a rehabilitation programme aimed at assisting in repatriation by funding rural projects.
- 13) **Afghan Reconstruction Consultants**, a group of Arab engineers and architects who work closely with the Ministry of Reconstruction of the interim government. ARC has experience of reconstruction of clinics.
- 14) **Reconstruction Committee for the North**, a branch of the inter-provincial Council of the North (*Shura e Nizar*) which is the creation of the *Jamiat i Islami* party. The committee has ambitious plans for reconstruction in the Panjshir valley.
- 15) **Reconstruction Office for Balkh Province** is a recently-formed group of engineers who are committed to providing materials for re-building in the province. On the basis of a survey of needs, a proposal for re-building 170 homes near Mazar i Sharif is being prepared.
- 16) **Reconstruction Office for Kabul Province** intends to co-ordinate reconstruction activities in the province. The office works within the plans of the Supervisory Council for the North East under the interim government. They plan to conduct surveys to establish needs in several areas.

Recommendations for assistance

Any effective intervention in housing should take into account the range of issues which affect the development of a community and their shelter. The complexity of these issues in the highly volatile situation that now prevails in Afghanistan, is clear. In these circumstances, long-

term plans for intervention are not feasible. In the medium-term, assistance on a small-scale could be effective. Such assistance should be monitored so as to inform future plans for long-term work which could be implemented in a situation that is more stable.

The replacement and repair of homes, as part of a gradual process of rehabilitation, is under way in some parts of the country. In many cases this is being done with little assistance from outside. The extent of this activity is limited. The process is likely to continue, as some form of permanent shelter is an important step in the process of resettlement. It is clear that the majority of the resources and skills for reconstruction will have to come from the Afghans themselves. In these circumstances, any plans for assistance in the reconstruction or repair of rural homes on a massive scale would be unrealistic and inappropriate.

There is, however, scope for housing assistance on a small scale at this stage for those who might otherwise be unable to resettle. This should be limited to helping families build for themselves, by providing support with materials and labour, or offering training.

The priority for assistance must be in areas which have suffered most from de-population. Together, refugees from the eastern and southern provinces of the country account for 75% of those who have fled their homes. These are also the areas which are most accessible for cross-border activities from Pakistan.

There is a need for more specific information about housing needs, materials and the potential for re-building in these parts. It is reported that surveys are becoming increasingly difficult to conduct in some rural areas, where expectations of assistance may be high. There is a case for small-scale projects that will, through their operations, generate a body of information about the issues that affect resettlement, while at the same time assisting rural families to re-house themselves.

NGO's and other groups who have experience with housing reconstruction or builder training, will be the most effective implementors of such projects in the present circumstances. Some have established good working relationships with communities or councils that may help them to negotiate the considerable obstacles that face attempts at reconstruction. The resources available to NGO's for reconstruction activities is limited, and technical and financial assistance from the UN system would be appropriate.

During the mission, discussions about the issues of re-building and repair were held with all of the groups mentioned above. Several of them are prepared to undertake housing projects as an adjunct to their existing activities in an area. Their capacity to take on additional projects, management skills and technical abilities vary. Technical support for Afghan field staff was felt to be needed if reconstruction work was to be effective. There is also felt to be a need for training in the construction management for NGO's and other groups.

The need for co-ordination in re-building activities is essential if scarce resources are to be effectively used. There exists a construction sub-

committee of the inter-agency group ACBAR which deals with proposals for all aspects of building reconstruction in the country. Such a committee may have an important role in determining policy guidelines, which may be used by all groups involved in housing. SWABAC and ICC may also be useful channels for such co-ordination work.

The most effective support for the process of reconstruction in the present circumstances could be achieved through a project which complements activities that are already under way, and encourages resettlement. Specifically, project activities would include the following:

- a) a series of **small pilot projects** aimed at assisting in self-built reconstruction or repair.
- b) support of existing **builder training** programmes for Afghans in Pakistan.
- c) **co-ordination** of housing activities, and technical or managerial support for groups doing cross-border work in housing.

a) **The Pilot Projects**

Six pilot projects should be undertaken on separate rural sites by groups who have proven experience in reconstruction. Each project will aim to assist in the re-building or repair of 500 homes for families without shelter. Assistance should be limited to a maximum contribution of the equivalent of \$300 per dwelling, in materials or labour. NGO's and other groups will be sub-contracted to undertake projects in areas to be agreed.

The identification of target areas for pilot projects should be made by the implementing group, on the basis of their field experience. Assistance should be spread between communities or villages where possible. The criteria for selection of beneficiaries for assistance from the projects should be established by the implementing group in consultation with the local *shura* or relevant authority.

Projects should explore the options for re-building with different materials. The use of traditional methods may be encouraged, but alternatives to the use of wood should be developed in areas where shortages arise. Assistance to house-holders might take a number of forms, depending on the local circumstances. It might be that the supply or manufacture of materials is appropriate. Support with the hiring of local labour may also be needed in some cases. Training to improve or adapt building skills may also be considered as necessary.

b) **Builder Training**

Support to the existing builder training projects should include payment of the registration and training costs for a number of Afghan trainees, and the development and production of educational materials as necessary. There is an opportunity to assist 600 certificated level and 400 advanced level trainees for the GTZ technical training centres in North West Frontier Province in 1990. Support should be provided to ILO

training centres in Baluchistan for training in brick-laying for domes and vaults for refugees. Support for seminars and workshops in appropriate building education techniques should be organised for trainers from these and other projects.

c) Co-ordination

Co-ordination of cross-border housing activities should include technical support as necessary for the relevant inter-agency organisations, including ACBAR, SWABAC, and ICC. Technical and management capabilities of the collaborating groups should be strengthened through support of short courses or seminars for field staff, engineers and administrators.

ANNEX 1

Mission itinerary

New York 30th, 31st May
Islamabad 2nd to 5th June
Pesharwar 5th to 11th June
Kohat (Kamkul, Shindand camps) 12th June
Pesharwar 13th to 17th June
Timargara, Khar 18th, 19th June
Pesharwar 20th, 21st June
Islamabad 22nd to 25th June
Kabul 26th June to 3rd July
Islamabad 4th, 5th July

From 4th to 12th July, Jolyon Leslie was a participant in a joint Salam Mission to Kandahar province, Afghanistan, under the auspices of The Office of the Co-ordinator for United Nations Humanitarian and Economic Assistance Programmes for Afghanistan (UNOCA). UN agencies participating in the mission were: UNOCA, UNHCR, UNICEF, UNDP, WFP and UNCHS (Habitat).

ANNEX 2

People consulted during the mission

New York

Anthony Patten, Henning Karcher / UNDP Asia Desk.
Mr. Okali, Dr. Celik / UNCHS (Habitat).

Islamabad

Hans von Sponeck, Ram Mahat / UNDP.
Martin Barber, Antonio Donini, Rene Albeck, Naveed Hussain / Office
of the Co-ordinator for Afghanistan (UNOCA).
Maureen Bradley / UNHCR.

Peshawar

Colin MacAndrews, Bob Eaton / UNDP NGO Support Unit.
Michael Keating, Sikander Firdad, Aisha Samat / UNOCA.
Anthony Land, Helmut Langschwert, Azizulah Khan / UNHCR.
Said Osman / UNHCR Territorial Officer (Kohat).
Max Baussan / Base Manager UNILOG.
Kenneth McKechnie / Consultant UNDP START Project.
Ted Albers, Willem Homan / ACBAR Secretariat.
Dr. Wasir Nur / Reconstruction Authority for Afghanistan.
Dr. Najimi / Afghan Education Committee.
Mr. Shuwaib / Jamiat Political Office.
Engineer Kemaluddin / Reconstruction Committee for the North.
Engineer Aziz / Reconstruction Committee for Balkh Province.
Engineer Fayyum / Reconstruction Office for Kabul.
Abdu Manan Amiri, Hakim Gul / Engineering Services for Afghan
Reconstruction.
Mir Muhamed Sediq / VITA Pakistan Rural Development Division.
Said Sibtain / Integrated Development Group.
Mr. Fadhil, Mr. Hashimi / Human Concern International.
Gottfried Marienfeld, Engineer Hashim / Pak German T.T.C.
Jan-Inge Bengtsson / Swedish Afghanistan Committee.
David Webster / Swedish Agricultural Committee.
Thor Armstrong, Mr. Tahir / Shelter Now International.
Debbie Harrison, Rae McGrath / World Vision International.
Sarah Foster, Peter Rees / Afghan Aid.
Asger Christianssen / Danish Committee for Afghanistan.
Cornie Huizenga, Mr. Latify / GTZ Domestic Energy Project.
Arne Strand / Norwegian Committee for Afghanistan.
Duke Miller / IRC Self Reliance Project.

Quetta

Peter deClercq, Mr. Khatibi, Mr. Mujadedi / UNHCR.
Sultan Aziz / SWABAC Secretariat.

Timargara

Haroun Ayoub / UNHCR Territorial Officer (Malakand, Bajaur).
Dr. Rabihullah / Basic Health Unit, Timar Camp.

ANNEX 3

Material Costs

The costs of materials for traditional building in both rural and urban areas of Afghanistan is as follows:

Sun-dried bricks

Costs vary between 1000 and 1500 Afghanis per thousand. Bricks that are made for sale (usually near the bazaars) are more expensive than those made on the construction site itself.

Fired bricks

Few fired bricks are now sold in the villages, but those from a kiln in Arghastan (Kandahar) were said to cost 10,000 Afghanis per thousand. Bricks from a mechanised plant near Kabul (Bagrami) are sold for 7000 Afghanis per thousand.

Timber

Poplar (*chinar*) beams of between 5 and 6 metres length vary in price between 700 Afghanis (Badakshan) to 2500 Afghanis (Kandahar). Complete trees sell for between 2000 Afghanis in Maiwand (Kandahar) to 4500 Afghanis in Arghastan. Smaller timbers, about 1.5 metres long, for use as purlins cost between 200 and 500 Afghanis in the southern areas. Windows (often now brought from Pakistan) cost up to 3000 Afghanis with frames. Door frames cost up to 1600 Afghanis. Entrance doors (2.5 by 2 metres) can cost 6000 Afghanis.

Bamboo, which is not commonly used, but may be a structural material for temporary shelter costs R100 per 6 metre length in Pakistan.

Stone

Rough-dressed stone walling costs about 2600 Afghanis per cubic metre near Kabul (including labour and cement mortar). Quarried stone in Logar is said to cost about 3000 Afghanis per cubic metre.

ANNEX 4

General building costs

Building costs in the refugee camps in Pakistan may help to give an indication of the investment that has been made in housing. Costs are up to R5,000 or \$250 per room (4 metres by 6 metres) built of earth, and about R15,000 or \$750 for a room built of fired bricks.

A more detailed breakdown of costs for a typical room of 4 by 6 metres in Kandahar province is:

Vaulted room

Excavation:	1 man/day @ Afs600	600
Walling:	9 man/days @ Afs600	5,400
Vaulted roof:	5 man/days @ Afs2500 (bricklayer)	12,500
	2500 bricks @ Afs1	2,500
	5 man/days @ Afs600	3,000
	Plastering:	3 man/days @ Afs1200
Total	Afs27,600

Flat timber-roofed room

Excavation:	1 man/day @ Afs600	600
Walling:	9 man'days @ Afs600	5,400
Roofing:	2 man/days @ Afs1000 (structure)	2,000
	8 beams @ Afs1500	12,000
	120 wasak @ Afs100	12,000
	2 man/days @ Afs600 (earth cover)	1,200
	Plastering:	3 man/days @ Afs1200
Total	Afs47,600

Both of the above are approximate, and assume that water, earth and a basic amount of unskilled labour are available without cost.

Hired labour costs for building

The cost of hired labour differs between areas. In general, unskilled labour, for earth-building or brick-making is between 500 and 700 Afghanis a day. In some areas unskilled workers can cost up to 1,000 Afghanis a day in the summer, when there is greatest demand.

Stone masons or carpenters cost between 1,000 and 1,200 Afghanis a day. Brick-layers for domes or vaults charge between 1,500 and 2,300 Afghanis a day. A donkey for transport can cost 800 Afghanis a day to hire. A tractor and driver will cost up to 10,000 Afghanis a day.

ANNEX 5

The geography of destruction

Estimates of war-related damage to housing by province are general and could (with the exception of Kandahar) not be substantiated by members of the mission. They give some indication of the geography of destruction in the country.

Herat

40% of homes in Herat city (pop. 250,000) are destroyed. 600 of the 1300 villages in the province are damaged.

Farah

The area around Shindand is devastated.
Farah (Markaz) and Farah Rud are badly damaged.

Helmand and Nimroz

Housing in the lower Helmand valley is badly damaged.
Many homes in Zaranj have been destroyed.

Kandahar

60% of Kandahar town has been destroyed.
Many villages in the Arghandab area have been destroyed.

Uruzgan

Tiran Kot town is badly damaged.

Paktia

Khost and villages in the surrounding area are devastated.

Logar

Muhamed Agha is totally destroyed.

Kunar

Homes in the Kunar valley above Chagasarai are badly damaged.

Paktika

There is widespread destruction near the town of Urgun.

Kapisa

90% of homes in the lower Panjshir valley have been destroyed.
The town of Rokha has suffered serious damage.

Badakshan

There has been severe damage to homes in lower Anjuman valley.

Takhar

The town of Talogan is said to be destroyed.

Baghlan

80% of villages in lower Andarab valley are destroyed.

Jozjan

Areas around Qarqin and Shar Tepe have been badly damaged.

ANNEX 6

REFUGEE CASE STUDIES (North West Frontier Province)

The following case studies were prepared after interviews in two camps near Pesharwar with a number of Afghan families.

Case Study 1

Azizullah (age 40) and 13 of his family live in the 10-year old settlement of Gamkole, established on government land near Kohat, about 40 miles south of Pesharwar. The camp is well-established, with some mature trees, a small bazaar, schools and a mosque. All of the houses are single storey, built of earth with flat roofs on timber beams. Houses are built around an outdoor space which is often enclosed by earth walls for privacy. Azizullah came from the village of Firman Bagh near Kabul with his entire family six years ago. He, like many men in the camp, works as a labourer on municipal construction projects near Kohat. In Gamkole he has built his immediate family a room of 6 metres by 3 metres, close to five other rooms occupied by his relations. His present home, occupied by five people, is on the site where he and his family pitched a tent on arrival in Pakistan. He built the walls of the house himself, digging earth from the site. He bought 12 timber poles for the roof from the bazaar, and estimates that the house cost about R6000. He did not hire any labour for the building, because he could not afford to.

The entire family hope to return to their village when there is an Islamic government in Afghanistan. His house was destroyed from the air six years ago. It was a large home, with some 15 rooms, including crop stores, ranged around a walled yard. Some of the rooms were built of bricks with cement roofs, while others were of earth. He thought that parts of the house were 50 years old. Azizullah wishes to re-build his home on the same site when he returns to Firman Bagh. He would like to re-build in burnt brick, but knows this will be expensive.

Case Study 2

Muhammed Rassoul is about 80 years old, and lives with his family, including his 24 year-old son, in Gamkole camp. There are about 35 members of his family, all from the village of Jagh Dilak near Kabul, living in the camp. Some of them have been in Pakistan for about 10 years. He was a farmer before being forced to leave Afghanistan, and his son now works as a casual labourer in Kohat. They built their house, which now comprises six rooms, over several years. Each room, which measures about 5 by 3 metres, is built of earth with timber roofs. It took the family about two weeks to construct each room, and they spent about R3000 on materials. Rooms are grouped around a small yard, with a door to a narrow alley bordered by the neighbouring houses.

Muhamed and his family have a house of about 10 rooms built of earth and stone in their village in Afghanistan. There was a large garden with fruit trees near the house. Members of the family built most of the house, some of which dates back to the time of his grandfather. Timber was bought from the bazaar in Kabul, while the stone was brought by truck from a site near the village. Part of the house has been destroyed, and the garden has died for lack of water. The family will return to repair their house when they can be sure that the area is safe from attack, mines have been cleared and they can grow some food. He intends to build again with stone, but said that he would need assistance to hire labour for the work.

Case Study 3

Nur Ahmed is about 60 years of age, and lives in Gamkole camp with five of his brothers and cousins, each of whom have their families in Pakistan. In all about 66 people from the village of Jagh Dilak, Nur Ahmed's home village, live in the camp.

He has lived in the camp for about ten years. He has built his family a number of rooms around a walled yard. The biggest room measures about 8 by 3.5 metres, and is used for village meetings and for family entertainment. He built it four years ago, and it took about 20 days to construct with the help of 3 hired labourers, at a cost of R6000. The walls are of earth, and the roof has three steel RSJ's supporting smaller timbers. The materials for the roof were bought in the nearby bazaar in Kohat.

In Afghanistan, Nur Ahmed farmed for a living. His brothers were traders or owned trucks for hire. The village of Jagh Dilak lies about 70 km west of Kabul. His house in the village comprised about 11 rooms (including stores), 5 of which he built himself of stone. Nur Ahmed brought the stone from a local source, and dressed it himself. He hired some unskilled labour from the village to assist. Timber was bought from a sawmill in Kabul.

Nur Ahmed returns to the area to stay with his relatives every year, in order to help in the *jihad*. His house has been badly damaged, but some of the homes in the village are habitable. Few people are re-building in Jagh Dilak. Stone is said to be plentiful, but the cost of labour is as high as Afs2000 a day. Nur Ahmed says that people may build with earth to begin, as it will be cheaper. Timber will also be expensive, because forests near the village have been burned during the war. There is also a shortage of firewood in the area. The priority for his family will be to revive their land to some degree, but they need shelter in which to live.

Case Study 4

Yardil Muhamed lives in the camp of Mecheni near Pesharwar. He came to Pakistan about eight years ago. He and his family lived in tents for about four years, before they built two rooms of earth. Now all of his family of 18 live in these two rooms and two tents in the same yard. Yardil has worked as a labourer in Islamabad and Pesharwar for a num-

ber of years. He also returns to Afghanistan regularly to join the *jihad* in the area near where he lived.

His home in Afghanistan is the village of Surkur in Nangahar province. Surkur lies in a river valley, and comprises about 300 families. Yardil's father was the traditional head-man (*malik*) of the community, and the family owns about 400 *jeribs* of agricultural land in the valley. His grandfather had built a large house with 18 rooms in a walled yard with tall towers in the corners. The house was built of pakhsa earth laid on stone foundations. The timber for roofing was cut from the forests about 10 km from the village. Labour was hired from the village for the building, which was done over a number of years. Livestock were kept in separate stalls, and there was a granary.

This home has been destroyed in the fighting, together with most of the houses in Surkur. Yardil has returned to his village several times, but was not able to do any reconstruction work, for he was on *jihad*, and his commander had ordered him to fight. Some of his family, including his sister, remained in the village and have repaired parts of their homes. He plans to return to Surkur alone or with his brother to begin work on the fields and the house, before his wife and children return. He would like to build a new house on the site of the one built by his grandfather, although it will not be as big. He feels that he might improve on the layout of rooms in time, but will need to discuss it with his family. He will only return when there is an Islamic government in the country.

Yardil is at present a trainee mason at the Technical Training Centre in Peshawar. He hopes to be able to use the training he is receiving in mud, brick and stone building techniques when he returns to his home.

Case Study 5

Ali Khan came to Pakistan at the beginning of 1989, having spent several years as a fighter near Maidan Shahr in Wardak province. He lives now in a military compound for fighters in Peshawar. He is 22 years old.

His home village is Langar, to the south west of Kabul on the main highway. The village comprises about 30 houses, some of which have suffered from decay when their owners left. As the area is not one with much rebel activity, it has not suffered badly from the war. Ali Khan lived in 2 rooms with eight other members of his family, who have remained in the village. The rooms are built of earth on stone foundations, which had been collected from the valley. The timber for the roof had been bought from those in the village who had trees. A carpenter from the village was employed to help with the roof, but otherwise the work was carried out by the family. The family own some land, where they plant wheat, but this has been interrupted by men going away to fight.

Ali Khan estimates that he and his family have several months work to do if they are to repair their house in stages and prepare their land for cultivation again. He came to Pakistan to find work, for there was little opportunity to earn money in the area when he was not required to

fight. He is a trainee on the basic course at the Technical Training Centre in Peshawar, and will continue on to complete the advanced course. After this, he will remain for about a year in Pakistan to earn some cash, before returning to his village.

Case Study 6

Ghulamullah is 19 years old, and has been a fighter for most of his teens. He has never been to school, and is currently a trainee at the TTC in Peshawar. If there is peace, he would like to return to work in Afghanistan, or else he will return to fight again.

He rents 2 rooms in a camp near Peshawar, as he does not want to spend money on building his own house. He came to Pakistan in 1987 from his home village of Gamjkul in Kunar province. The village used to have about 200 families living in it, but some homes have been damaged in the fighting. Some families have been able to patch the damage, and are using some of the rooms of their homes. Few have left the area.

Ghulamullah's family of 10 lived in a single large room, about 9 by 6 metres. The house had been built of stone by the village mason. The family had fetched the stone from the nearby Sadkarnu valley and transported to the site on a donkey. Fellow villagers, including the village carpenter, had helped with labour, and would expect help themselves when they needed it. The family own some land near the village for cultivation, where they also grow poplars. When they do not need the timber from these trees themselves, they might sell it.

Ghulamullah would like to return to join the 3 members of his family who still live in their home. He will not return with his wife until he can be sure that the fighting is over. He would like to use the brick-laying skills he has gained on the course at home, but realises that this will mean working in a town.

ANNEX 7

Transport Costs

Approximate figures for transport by road (in Pakistani Rupees per tonne) to various provinces in Afghanistan are as follows:

From Pesharwar to:

Kunar	1,500
Laghman	600 to 800
Wardak	3,500
Paktika	2,000 to 2,500
Paktia	1,500 to 2,000
Logar	3,500
Kabul	5,700 to 6,500
Nangahar	1,500

Prices are indicative only, and can vary according to the weather, military activity and demand. Prices allow for transfer at the frontier from 15 to 20 tonne trucks to trucks with a carrying capacity of about 5 tonnes.

Source: UNILOG, Pesharwar

ANNEX 8

Bibliography of documents on issues related to housing in Afghanistan

UNHCR Preliminary Report on conditions affecting the repatriation of Afghan refugees. (June 1988) [Richard English] UNHCR. Geneva.

UNHCR Folio Maps of Afghanistan / Afghan refugees .(October 1988)

UNOCA Appeal of the Secretary-General (June 1988) New York
 Operation Salam Plan of Action (March 1989) Geneva
 Operation Salam First Consolidated Report (Sept 1988)
 Operation Salam F.C.Report Update (February 1989)
 Operation Salam Mission reports 1 to 6

The Agricultural Survey of Afghanistan First Report (May 1988) and Second Report (April 1989). Swedish Committee for Afghanistan.

Report on Agriculture and Rural Reconstruction. (April 1988) [Carter/Azoy] Co-operative Committee of PVO's. Pesharwar.

1988 Annual Report. Danish Committee for Aid for Afghan Refugees. Report of Afghanistan Mission. (July 1988) CARE

Demographic, Social and Ecological Consequences of the War in Afghanistan. (March 1988) [Sliwinsky] Bureau International Afghanistan.

Evaluation of the Housing Programme. (November 1988) [Robin/Scherer] GTZ / ACROTERRE.

Traditional Architecture of Afghanistan. (1980) [Hallett / Samizay].

A Preliminary Investigation of Contemporary Afghan Councils (April 1989) [Carter / Connor] ACBAR Pesharwar.

Islam and Resistance in Afghanistan (1986) [Olivier Roy] Cambridge University Press.

Sociopolitical Adjustment among Afghan Refugees in Pakistan (December 1987) [Pierre Centlivres] Migration World Vol XV No 4 New York.

Report on a Joint Mission to Afghanistan on Pilot Housing for Low Income Groups/Research in Indigenous Building Materials (October 1987) [Jayaraman / Ray] UNCHS (Habitat) Nairobi.