IASC Inter-Agency Standing Committee
Emergency Shelter Cluster

Selecting NFIs for Shelter

December 2008

This booklet offers guidance on how to:

- select and combine Non-Food Items (NFIs), such as blankets, cook sets, plastic sheeting and timber, into packages.

This booklet offers an overview only of how to:

- integrate the distribution of these NFIs into wider assistance programmes, involving other sectors and IASC clusters; and
- integrate the distribution of these NFIs into the development and implementation of shelter sector strategies.

This booklet does not provide guidance on the specification, procurement, logistics, distribution of NFIs, or support to beneficiaries.

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Coordinating organisation: Shelter Centre

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Acronyms and abbreviations

ARI	**Acute Respiratory Infection**
CCCM	**Camp Coordination and Camp Management Cluster** *(IASC Cluster)*
CWGER	**Cluster Working Group on Early Recovery** *(IASC Cluster)*
CGI	**Corrugated Galvanised Iron**
ESC	**Emergency Shelter Cluster** *(IASC Cluster)*
HDPE	**High Density Polyethylene**
IAPSO	**Inter-Agency Procurement Services Office**
IASC	**Inter-Agency Standing Committee**
IATA	**International Air Transport Association**
ICRC	**International Committee of the Red Cross**
IDP	**Internally Displaced Person**
IFRC	**International Federation of Red Cross and Red Crescent Societies**
IOM	**International Organization for Migration**
ISO	**International Organization for Standardization**
LDPE	**Low Density Polyethylene**
LSU	**Logistics Support Unit of UN/OCHA**
MSF	**Médecins Sans Frontières**
MSF-B	**Médecins Sans Frontières Belgium**
NFI	**Non-Food Item**
NGO	**Non-Governmental Organisation**
NRC	**Norwegian Refugee Council**
SGBV	**Sexual and Gender Based Violence**
SWG	**Standard Wire Gauge**
TOG	**Thermal resistance Of Garment**
TWIG	**Technical Working Inter-agency Group**
UN/OCHA	**United Nations Office for the Coordination of Humanitarian Affairs**
UNDP	**United Nations Development Programme**
UNEP	**United Nations Environment Programme**
UNHCR	**United Nations High Commissioner for Refugees**
UNHRD	**United Nations Humanitarian Response Depot**
UNICEF	**United Nations Children's Fund**
WASH	**Water, Sanitation and Hygiene** *(IASC Cluster)*
WHO	**World Health Organization**

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Foreword by ESC co-chairs

Non-food items (NFIs) are distributed in large numbers every year as part of humanitarian assistance programmes. From the first days of emergency through to durable solutions, NFI distributions help to save lives and restore a sense of home following a conflict or natural disaster. NFIs include *General Household Support Items*, such as blankets and cook sets; *Household Shelter Construction Support Items*, such as tool kits and construction materials; and *Household WASH Support Items*, such as mosquito nets and household water treatment. Despite the resources put into purchasing and distributing these NFIs, little guidance exists on which NFIs are appropriate to distribute in the specific conditions of a humanitarian response.

As a resource offered by the Emergency Shelter Cluster of the Inter-Agency Standing Committee (IASC) to its members and other stakeholders, these guidelines support the selection and combination of appropriate NFIs into kits for distribution. These guidelines support and inform these decisions by offering programme considerations for displaced and non-displaced populations, climatic considerations for the locality of the response, and cultural considerations for the affected community.

These guidelines reinforce and support the approach that NFI distributions should exist within wider shelter programmes and wider assistance programmes. NFIs described in these guidelines may be distributed by different stakeholders, as well as by different clusters. Members of the Emergency Shelter Cluster are encouraged to continue liaising with their colleagues in complementary clusters such as the Camp Coordination and Camp Management Cluster, the Early Recovery Cluster, the WASH Cluster, and the Logistics Cluster to avoid duplication in assistance and gaps in response.

These guidelines also support minimising importation and maximising local procurement where possible, in order to respond as needs change from survival in the early stages of a response, through to durable solutions and the recovery of sustainable livelihoods.

With these consensus guidelines, the Emergency Shelter Cluster aims to further support all stakeholders in undertaking NFI distributions in a consistent, equitable and appropriate manner as part of wider humanitarian operations.

Sajjad Malik, UNHCR

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December 2008

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1 The role of NFI distributions

This section offers an overview only of:

- **the role that Non-Food Item (NFI) distributions play in assistance programmes, and how they are adapted to maintain support over the different phases of response, from the emergency phase until durable solutions;**
- **the standards and indicators that are relevant to the selection and distributions of NFIs; and**
- **the cross-cutting issues, such as gender, age, vulnerability, exploitation and the environment, which affect the selection and distribution of NFIs.**

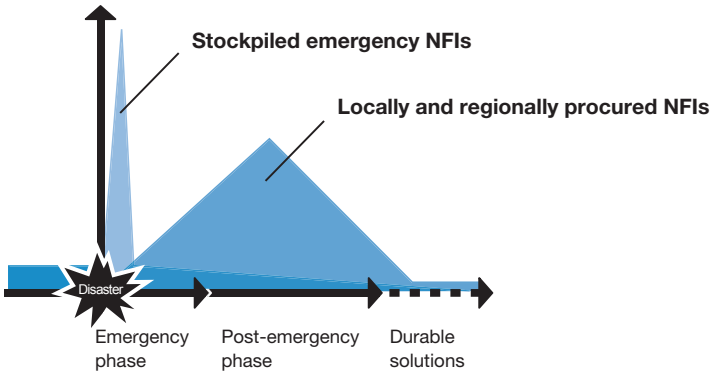
1.1 NFI distributions from emergency phase to durable solutions

NFIs are distributed from the emergency phase until durable solutions are achieved. Items distributed change over the period of response.

The figure below illustrates how, over the duration of the response, the demand for NFIs changes. Initially, a higher proportion of stockpiled NFIs are distributed, when there are constraints upon local availability and logistics. Later, after the emergency phase, more NFIs are distributed that are procured locally and regionally.

Some NFIs require complementary instruction, promotion, or education to be provided to recipients, while others can be distributed on their own (» see section 1.2).

Fig 1.1 ***Change in demand for different NFIs over time***



Immediately after the disaster, initial assessment requires priority and support within organisations and coordination mechanisms so that it does not delay distribution.

Different NFIs are commonly distributed at different phases of a response. Meeting these changing needs requires ongoing support. Continuous dialogue with the donor community should take place from the onset of the response through durable solutions.

Phases of response

Preparedness before a disaster or conflict; organisations can prepare themselves, set up procedures, make agreements with suppliers and stockpile materials.

In the first days following any emergency, affected communities and host families often lead the initial response. For a large scale emergency, materials are commonly dispatched internationally from pre-positioned stockpiles.

In the first weeks, packages and materials are requested on the basis of initial assessments and consultation.

Over the following weeks and months, community participation and more detailed needs assessments are usually possible. This allows more tailored material orders to be made.

It usually takes many years to support affected populations in achieving durable solutions after conflicts and natural disasters. Relocation, repair or complete reconstruction require coordinated and cumulative assistance, including distributions of NFIs. The duration of assistance may mean that further distributions may be required for NFIs which have reached the end of their useful life, especially in the case of NFIs which were of poor quality, or inappropriate for the climate, season, culture, or current phase of response.

1.1.1 The importance of assessment

Coordinating the early assessment of needs, access, markets and resources will determine the appropriateness and effectiveness of NFI distribution programmes.

Relief priorities and level of assistance are best agreed in consultation with the disaster-affected families, the host communities, the government, operational organisations, and coordinating bodies, as part of a continuous and coordinated process of assessment, monitoring and evaluation.

First assessments are designed both for speed and to gather assessment capacity and stakeholders. First assessments are limited on scope and are part of a continuous assessment, monitoring and evaluation process.

Rapid initial assessment is important in order to respond to both emergency humanitarian need, and to real or perceived pressures from within organisations, by governments, and in the media. Within organisations, shelter capacity may be insufficient to support capacities in procurement and logistics, which need to rapidly establish pipelines and enter into contracts with suppliers on favourable terms.

1.2 NFI classification

As agreed between the IASC Water, Sanitation and Hygiene Cluster and the IASC Emergency Shelter Cluster[1], NFIs are divided into three broad categories, of which the following two will be the main focus:

- **General Household Support Items,** such as cooking sets, blankets, jerry-cans, and buckets, which can usually be distributed without additional instruction, promotion, or education; and
- **Household Shelter Construction Support Items,** such as tool kits and construction materials, which usually require additional instruction, promotion, and/or education (» see section 2.3).

For information purposes, the third category is outlined below:

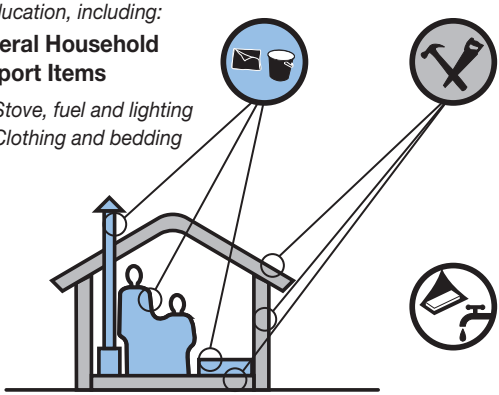
- **Household WASH Support Items,** such as mosquito nets and household water treatment which usually require additional instruction, promotion, and/or education.

Fig 1.2 ***Definition of NFIs for the purpose of these guidelines***

*Items which usually **do not** require additional instruction, promotion, or education, including:*

General Household Support Items

e.g. Stove, fuel and lighting
e.g. Clothing and bedding



Items which usually require additional instruction, promotion, and/or education, including:

Household Shelter Construction Support Items

- Construction materials
  e.g. plastic sheeting, CGI
  e.g. timber, bamboo, bricks
  e.g. flooring, roof insulation
- Tool kits
  e.g. hammer, shovel, axe

Household WASH Support Items

e.g. Mosquito nets
e.g. Household water treatment

1 See section 8.4 for an excerpt from the proposed 'INTER-CLUSTER MATRIX - WASH/Emergency Shelter at Country Level'. The excerpt contains further details on these packages

1.3 NFIs and why they are needed

General Household Support Items support survival through personal hygiene and nutrition, while Household Shelter Construction Support Items support adequate shelter, from survival and later for recovery to sustainable livelihoods.

1.3.1 The need for NFIs

Shelter is a habitable covered living space, providing a secure, healthy living environment with privacy and dignity for the groups, families and individuals residing within it[2]. The need for General Household Support Items and Household Shelter Construction Support Items is described in the *Humanitarian Charter and Minimum Standards in Disaster Response* (The Sphere Project, 2004):

> *"Clothing, blankets and bedding materials meet the most personal human needs for shelter from the climate and the maintenance of health, privacy and dignity. Basic goods and supplies are required to enable families to meet personal hygiene needs, prepare and eat food, provide thermal comfort and build, maintain or repair shelters."*
>
> (The Sphere Project, 2004: p 230)

1.3.2 The humanitarian impact of NFIs

People need shelter to stay healthy and safe and retain their dignity, as well as to support livelihoods. In emergencies, distributing NFIs or enabling people to purchase items themselves can help to provide for these needs in the following ways.

Health

General Household Support Items such as clothing and bedding and Household Shelter Construction Support Items for roofing and walls help protect people from external conditions such as rain, snow, wind, dust, sun and vector-borne diseases, thus reducing the exposure of beneficiaries to communicable and noncommunicable diseases. Appropriate selection and distribution of NFIs, including improved cooking stoves and tents which can accommodate a chimney, can reduce exposure to indoor air pollution. Indoor air pollution from cooking with solid fuels is the fourth largest cause of death in the world's poorest countries, causing serious illnesses including Acute Respiratory Infections (ARIs)[3].

2 Corsellis & Vitale (2005)

3 Warwick & Doig (2004)

Security

Exposure to insecurity and natural hazards is often impacted by the location of distributions and the settlement options supported. The distribution of items to host or hosted families may, for example, increase or decrease vulnerability to abuse and Sexual and Gender Based Violence (SGBV). In addition, the distribution of appropriate Household Shelter Construction Support Items can support the adoption and use of appropriate hazard resistant building techniques, influencing risk management.

Privacy, dignity, and culture

Clothing, bedding and a simple shelter provide a basic level of privacy and help to maintain the dignity of people who may have lost everything. Cultural priorities vary and are often expressed through clothing, for example in covering the body, and through shelter, for example in the use of space by different genders and ages.

Livelihood support

From the emergency phase until durable solutions, and whether or not the population is displaced, appropriate shelter offers a foundation to the recovery of livelihoods. Shelter may protect agricultural produce, for example, or salvaged materials and belongings. In addition, shelter supports the development of livelihoods, for example by supporting Home Based Enterprise (HBE)[4] activities.

1.3.3 Standards and indicators

The Sphere Project - *Humanitarian Charter and Minimum Standards in Disaster Response*

Five minimum standards and corresponding indicators have been agreed on for the distribution of NFIs as part of the *Humanitarian Charter and Minimum Standards in Disaster Response* (📖 The Sphere Project, 2004), summarised below and detailed on the inside back cover of these guidelines.

For example, 'Non-food items standard 1: clothing and bedding' reads:

> *"The people affected by the disaster have sufficient clothing, blankets and bedding to ensure their dignity, safety and well-being."*
>
> (📖 The Sphere Project, 2004: p 230)

One of the four indicators of meeting this standard is that:

> *"Those individuals most at risk have additional clothing and bedding to meet their needs (see guidance note 5)."*
>
> (📖 The Sphere Project, 2004: p 230)

Assessment criteria for determining whether or not the indicator meets the standard may be found in Appendix 1 of the *Humanitarian Charter and Minimum Standards in Disaster Response* (📖 The Sphere Project, 2004).

4 📖 Sheppard, S. and Hill, R. (2005)

Standards for specific NFIs

There are several different types of standard for NFIs, of varying appropriateness depending on the item. The following types of standard are the most commonly used.

Global consensus standards: For some items, there are de-facto standards or specifications developed by one or a group of organisations which are then widely accepted by other organisations. During the early 1990s, there was no common standard for plastic sheeting, and as a result prices rose and quality was uncertain. An interagency project was run in the mid-1990s leading to a common specification which is still largely followed by the major organisations (» see section 5.2.5).

Global lead organisation: For some items, there is an international organisation which has been mandated or has taken the lead in developing and promoting standards, for example WHO is the global lead organisation for mosquito nets (📖 WHO, 2005).

Use of standards developed by an individual organisation: For some items, a number of organisations may have developed their own standard specifications. These may not be exactly the same, but are equally valid. They could safely be used by other organisations that do not have the time or resources to develop their own standards. An example would be using an existing specification from the ICRC/IFRC catalogues (📖 ICRC/IFRC, 2009) as a starting point for discussion.

Local standards: For NFIs that are sensitive to cultural or climatic variation, such as stoves and clothes, no single standard would be appropriate. However, useful local standards or selection criteria may exist which could be used as a starting point.

1.4 NFI distributions and cross-cutting issues

Cross-cutting issues, such as gender[5], age[6], vulnerability, exploitation and the environment all influence the selection of appropriate NFIs. The process of distributing NFIs has great impact upon these same cross-cutting issues. The continual assessment, monitoring and evaluation of distribution programmes ensures that these issues are considered at every stage of response.

For further information on addressing the needs of specific vulnerable groups in humanitarian emergencies refer to guidance from 📖 IASC, 2006 and 📖 HelpAge International, 1999.

5 📖 IASC (2006)

6 📖 HelpAge International (1999)

Below are some examples of how cross-cutting issues might impact on NFI distributions within wider shelter programmes.

Gender

- For example, in certain cultures, Household Shelter Construction Support Items may be needed to provide separate living areas for men and women.

Age

- For example, the aged and very young may require additional General Household Support Items, such as blankets, as protection from the cold.

Vulnerability

- For example, those living with health conditions such as HIV and tuberculosis have specific shelter requirements.
- Contact local organisations which represent disabled people requesting their participation in the process of selecting which NFIs to distribute

Exploitation

- For example, to reduce labour exploitation in supply chains, some organisations may require ethical procurement. More information on ethical procurement can be found in *Ethical Trade Initiative Base Code and Principles of Implementation*, ℹ www.ethicaltrade.org.

Environment

- For example, community natural resource management practices may require support[7] if disrupted by the high demand for construction materials, for example in harvesting timber or extracting aggregates.

☠ Health and safety

Care should be given to understanding the short-, medium- and long-term effects on health of NFIs distributed. Materials and material treatments may contain toxins, such as formaldehyde.

7 UN/OCHA and UNEP (2007)

2 NFI distributions as part of wider shelter programmes

This section an overview only of:

- **the differing needs of displaced and non-displaced populations with respect to NFIs;**
- **how NFI distributions are only one part of a shelter response, and how they are combined with other assistance methods as part of an integrated shelter strategy; and**
- **how shelter sector NFI distributions should coordinate with other sectors to avoid gaps and overlaps in assistance.**

2.1 Coordinating NFI distributions

Effective distribution requires efficient coordination within sectors, between sectors, and involving all stakeholders, including the affected population and government.

Coordinated assessments, distributions, monitoring, and registration of beneficiaries will assist in identifying duplication in distributions, locating gaps in assistance, and planning subsequent distributions.

2.1.1 Coordination through the clusters of the IASC

As part of the Humanitarian Reform Process of the Inter-Agency Standing Committee (IASC), 'clusters' have been created that correspond approximately to what were known previously as sectors of operation.

Through the cluster approach, the responsibility to coordinate at both global and operational levels has been assigned to specific lead organisations[8]. Each cluster comprises a number of organisations which act as partners, including lead partners.

Lead partners may decide to delegate responsibility to another partner within a specific response. The cluster approach is not implemented in all responses. When it is implemented, not all clusters are always convened, and responsibilities are agreed at the operational level.

Considerations for inter-cluster coordination

At the global level, the Camp Coordination Camp Management (CCCM), Early Recovery (ER), Emergency Shelter (ES), Water, Sanitation and Hygiene (WASH), Health, and Nutrition clusters all request and coordinate NFIs for distribution.

For any item or group of items, several clusters may be involved with different roles in specification, procurement, stockpiling, assessing needs, transportation, distribution, monitoring and evaluating. Work is ongoing to agree:

- global and operational cooperation and coordination mechanisms, in order to prevent gaps and overlaps;
- the classifications, specifications and supporting guidance for the items related to each cluster; and
- items that are related to one or more than one cluster.

Coordination between the Emergency Shelter Cluster and other clusters

Agencies operating within the Emergency Shelter Cluster coordinate with agencies operating within the other clusters to ensure that there are no gaps in NFI distributions.

For example, mosquito nets or water containers may be distributed by the WASH or Emergency Shelter Clusters, and so coordination between these clusters is essential to avoid gaps and overlaps in response. Additionally, structures which fall under the responsibility of other clusters, such as latrines for the WASH cluster, often require Household Shelter Construction Support Items, such as plastic sheeting and timber[9].

2.1.2 Coordination within implementing organisations

Operationally, some organisations consider many General Household Support Items and Household Shelter Construction Support Items to be general relief goods under the responsibility of logistics and/or disaster management teams. Other organisations consider specific items to be the responsibility of specific sectors, such as water, sanitation and hygiene.

Responsibilities within organisations differ, so organisations should coordinate their activities within their sector and between sectors to ensure an appropriate response, with no gaps or overlap in assistance.

2.2 NFI distributions to displaced and non-displaced populations

After a conflict or natural disaster, affected populations may relocate a number of times, locally or over long distances, before achieving durable solutions.

The distribution of General Household Support Items and Household Shelter Construction Support Items are two methods of assisting the transitional settlement of displaced populations, and transitional reconstruction for non-displaced populations. Different packages of NFIs may be distributed in a refugee camp, for example, than from those distributed to residents of urban apartment buildings damaged in a conflict.

Different coordinating bodies and implementing agencies may be responsible for distributing in different phases to different settlement and reconstruction options.

9 A table containing excerpts from the proposed Responsibilities and Accountabilities Matrix for the Emergency Shelter Cluster and WASH Cluster may be found in section 8.4.

Displaced populations

Displaced populations are rarely able to carry anything other than the lightest and most essential of items, although sometimes they are able to bring with them possessions and even livestock. Options for gathering materials to build shelters, firewood and fodder for livestock are often limited as their transitional settlement will be on unfamiliar land, often managed by other communities. They may also find themselves in a new environment, such as those displaced into malaria risk areas, requiring mosquito nets they had not needed before.

NFI assistance to managed camps and to other displaced populations must be coordinated with the agencies responsible.

Fig 2.1 ***Six transitional settlement options for displaced populations***

Corsellis & Vitale (2005)

Non-displaced populations

The first priority of non-displaced populations will also be survival, however this may involve repairing or rebuilding their homes, even in the emergency phase. The families affected, their damaged homes, salvaged materials, possessions and livestock will all need sheltering to support the sustainable recovery of livelihoods. Returning or relocating displaced populations will also have specific needs.

Fig 2.2 ***Six transitional reconstruction options for non-displaced populations***

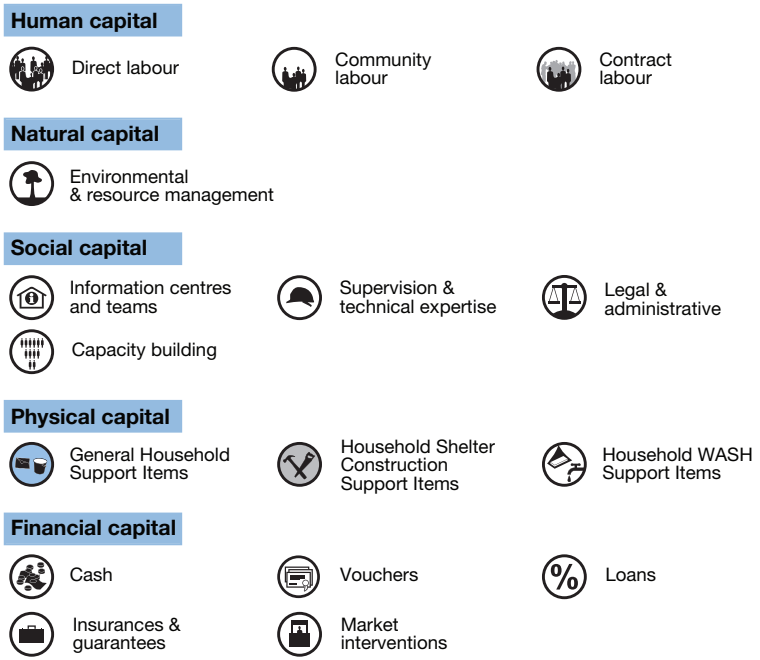
United Nations (2008)

2.3 NFI distributions combined with other shelter assistance methods

The distribution of NFIs alone does not constitute a shelter programme, although distributions may be the focus of response to survival needs in the first days of an emergency. Instead, NFI distributions are combined with other assistance methods as part of a wider shelter strategy to achieve durable solutions.

The distribution of General Household Support Items and Household Shelter Construction Support Items are two of the sixteen shelter assistance methods that are combined in support of transitional settlement and reconstruction options, summarised in the figure below.

Fig 2.3 ***Sixteen shelter assistance methods***



Providing complementary instruction, promotion and/or education with NFIs

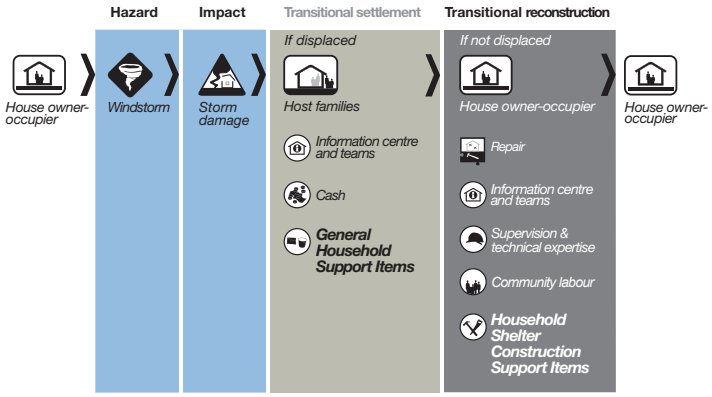
Certain NFIs will require additional support when distributed to ensure they are used in an appropriate manner (» see section 1.2). For example, assistance methods including *Information centres and teams* may have to be provided when distributing Household Shelter Construction Support Items, such as framing and roofing materials.

Shelter assistance methods throughout the response

Methods of assistance will evolve over time to respond to the changing circumstances and needs of affected populations. The first response will aim to meet basic survival needs, for example by distributing plastic sheeting, poles and rope. After this, assistance will support transitional shelter and settlement options, for example a one-room response. Thereafter assistance will contribute to durable solutions, for example by providing core housing.

In the example below, a family is displaced by a wind storm and finds shelter with a host family before returning to repair their home, receiving integrated assistance that includes information, cash, technical expertise and labour. In this example, General Household Support Items are distributed only while the family is displaced, while Household Shelter Construction Support Items are distributed only after the family returns.

Fig 2.4 ***Example combination of shelter assistance methods***



United Nations (2008)

2.4 Checklist for planning NFI distributions

Below are a series of checklist items for consideration when planning an NFI distribution within wider shelter assistance programmes.

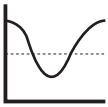
1. **Establish coordination mechanisms** by which the sectors, clusters, and other stakeholders such as the affected population and government agree the course of action.
2. **Agree on strategic objectives for the distribution**, and how the distribution programme will support the strategic planning objectives of the overall shelter strategy.
3. **Agree what additional instruction, promotion and/or education** may be required when distributing NFIs such as construction materials, mosquito nets, and household water treatment, to the affected population.
4. **Agree assessment, monitoring and evaluation practices**, to ensure that distributions remain appropriate to the affected population and phase of response.
5. **Establish participation mechanisms with stakeholders**, to ensure distributions are appropriate to the different groups, such as gender and age, within the affected population.
6. **Agree on schedule of implementation**, taking into account coordinated distributions, changing requirements, and integration with the wider shelter programme.
7. **Identify resource opportunities and constraints**, including sufficient and appropriate material resources, as well as resource capacity to undertake procurement and logistics.
8. **Identify the critical path for distributions**, considering challenges and opportunities with respect to resources, implementation schedule, and probable future scenarios.
9. **Identify likely future scenarios**, based upon probable future events, so that preparations can be planned for responding to each in a coordinated manner.
10. **Adapt local and international standards to response**, including national planning and building codes, and international law, principles and standards.
11. **Ensure efficient handover to subsequent stakeholders**, reviewing coordination at every handover to ensure that response remains appropriate, and without gaps or overlaps.

3 Climatic considerations

This section presents a series of considerations for 'base' packages of NFIs which should be used as a starting point for discussing and agreeing which NFIs to distribute, specific to responses in different climates. The three climate types considered here are cold, warm and humid, and hot and dry, consistent with those defined in *Humanitarian Charter and Minimum Standards in Disaster Response* (📖 The Sphere Project, 2004).

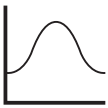
The considerations presented in this section do not describe complete packages that should be distributed without adaptation – an appropriate choice of NFIs to distribute will be different for each response. In addition to these climatic considerations, other factors particular to each response must be considered, including cultural norms, relevant hazards and specific security concerns (» see section 4.2).

Seasonal temperature variations



Temperature variations between seasons must be considered when selecting NFIs for shelter. For example, a disaster may strike during hot summer months, but this can soon be followed by a cold winter. NFIs must then be appropriate to support the affected population in both hot and cold conditions. In general, preparations for responding to climatic demands of the next season should begin well in advance of its onset.

Diurnal temperature variations



Variations in temperature over a 24-hour period (diurnal temperature variations) must also be taken into account. In some situations, for example in a desert, the daylight hours may be very hot but the temperature may then fall below freezing during the night (» see section 3.3).

Note that not all items that recipients require will vary by climatic condition. For example, appropriate hygiene packages vary between cultures much more significantly than between climate types. More information on appropriate hygiene packages is available from the WASH Cluster online at ℹ http://www.humanitarianreform.org/WASH.

3.1 Cold climate considerations for NFIs

In cold climates, with temperatures below freezing, people will die within one day without adequate protection from the elements. In addition, rain and wind increase heat transfer away from the body. Therefore survival is often dependent upon prioritising the distribution of NFIs to best provide thermal comfort.

Acute Respiratory Infections (ARIs) are also a particular concern in cold climates and NFIs should be selected to minimise this. Appropriate clothes, blankets and insulation from the ground and the provision of stoves with adequate ventilation both prevent low body temperature and reduce the need for people to gather very closely for warmth.

Fig 3.1 ***NFI considerations for cold climates***

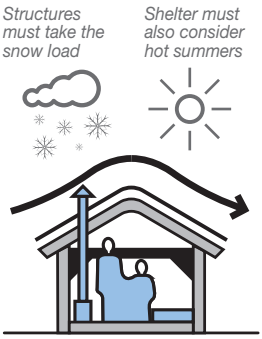
Considerations for
General Household Support Items

Protection from cold
e.g. warm clothing

Insulation from ground
e.g. mattress

Food preparation and hygiene
e.g. cook sets and utensils

Heating and cooking
e.g. stove and fuel



Considerations for
Household Shelter Construction Support Items

Protection from wind & snow
e.g. sufficient structure from snow and cold

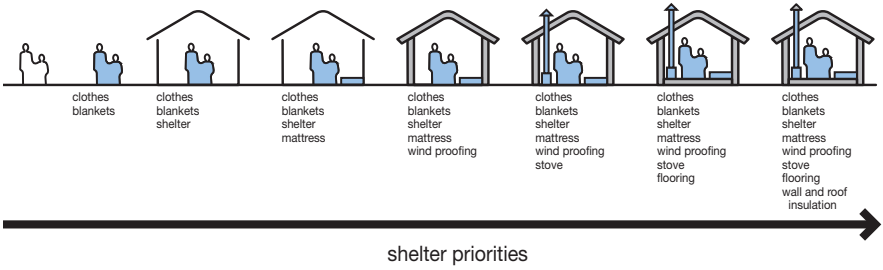
Insulation from ground
e.g. raised floor

Allow for temperature control
e.g. create sealed warm room

Stregthening against future hazards
e.g. earthquake resistant structure

The figure below illustrates the order of priority for NFI distributions in cold climates.

Fig 3.2 ***NFI priorities for cold climates***



UN/OCHA (2004)

The considerations below are not intended to be prescriptive, but are to act as a basis for discussion with stakeholders for the selection of NFIs.

Tbl 3.1 ***Cold climate NFI considerations***

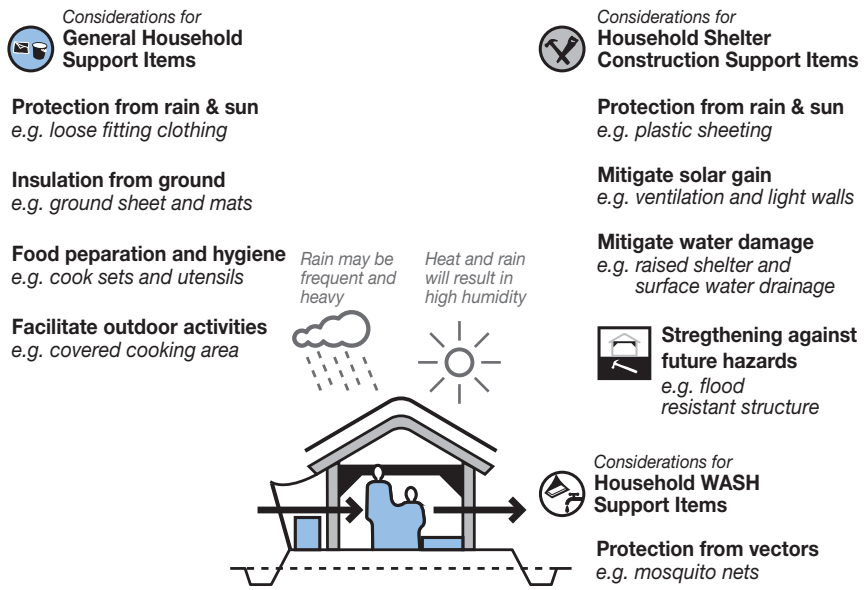
1. Emergency phase considerations	
General Household Support Items may include:	
Floor mats	A groundsheet under the insulating floor mats may be useful so that the floor mat does not become wet and lose its insulating properties (» see section 5.2.2).
Mattress	To prevent conductive heat loss from beneficiaries to the ground (» see section 5.2.2).
Blankets	To prevent conductive heat loss (» see section 5.2.1).
Clothes	To prevent heat loss.
Stoves	Since it is cold outside, people will generally cook indoors and the stove will also function as a space heater. This leads to indoor air pollution, which is a major cause of ARIs. Therefore, stoves should be distributed with flues to ventilate the shelter.
Cook sets	Due to the cold, people will need to heat large volumes of water to wash in and so maintain personal hygiene. A large vessel for boiling water should be distributed for this.
Lighting	A higher priority in cold climates than others since more time is spent indoors and there are fewer hours of daylight.
Jerry cans, or buckets	-
Household Shelter Construction Support Items may include:	
Plastic sheeting	Translucent plastic can be used in place of windows for partially damaged buildings in urban areas. This should be distributed with 'dabs' (small sections of wood with short nails), which are used to fix the plastic (» see section 5.2.5).
Partition mats	To minimise the internal volume of the shelter that is heated and to create a cooler vestibule space in the summer.
Rope	-
Poles	Consider the structural demands of snow loads and winds.
Nails	-
Tools	-
Tents	Where appropriate and supported by implementing agencies (» see section 5.2.10).
2. Post-emergency phase considerations	
Household Shelter Construction Support Items may include:	
Roof insulation	Likely to be the first priority for insulating a shelter since it is usually the most effective.
Wall insulation	Less important than roof insulation.
Flooring	-

3.2 Warm, humid climate considerations for NFIs

In warm, humid climates, NFI should be selected to reduce vulnerability to specific hazards such as floods and cyclones. Where flooding is the primary concern, consider distributing Household Shelter Construction Support Items from which a plinth and sacrificial walls can be built. In cyclone risk areas, brackets, bolts and additional nails or screws may be distributed to secure roofing, as well as metal straps to connect wall plates to walls and materials for cross bracing.

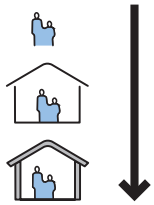
NFIs that are not vulnerable to dampness and rot should be selected. Canvas, for example, decays rapidly in warm, humid climates and some metal components will degrade when exposed to humidity.

Fig 3.3 ***NFI considerations for warm, humid climates***



The figure below illustrates priorities for distributing NFIs in warm, humid climates.

Fig 3.4 ***NFI priorities for warm, humid climates***



1. **Clothing** and **bedding** to control body temperature
2. **Covering** and walls to protect from rain
3. **Covering** and walls to protect from sun

The considerations below are not intended to be prescriptive, but are to act as a basis for discussion with stakeholders for the selection of NFIs.

Tbl 3.2 ***Warm, humid climate NFI considerations***

1. Emergency phase considerations	
General Household Support Items may include:	
Floor mats	Consider distributing waterproof groundsheet to protect floor mats (» see section 5.2.2).
Blankets	Light blankets only (» see section 5.2.1).
Clothes	Loose clothes which allow ventilation.
Cook sets	-
Jerry cans, or buckets	-
Household Shelter Construction Support Items may include:	
Plastic sheeting	-
Shade netting	To protect from incident sunlight during the significant periods when it is not raining.
Wall mats	-
Rope or wire	-
Structural poles	Local availability of wood is likely to be higher than in other climates. Consider bamboo or dressed timber.
Nails	Do not distribute nails with bamboo. Use wire instead.
Hammer	-
Machete	Also known as a panga or cutlass.
Tools	-
Tents	Used rarely in this climate. May be appropriate if natural resources for poles are scarce (» see section 5.2.10).
Household WASH Support Items may include:	
Mosquito nets	May require complementary support to recipients (» see section 2.3).
2. Post-emergency phase considerations	
General Household Support Items may include:	
Lighting	-
Stoves	Cooking inside is a major cause of ARIs. Stoves should be distributed with flues to ventilate the shelter. Also provide area to dry wood.
Household Shelter Construction Support Items may include:	
Shovel	-
Walls	-
Upgrading roofing	Consider distributing materials to create a ventilated air space in the ceiling, improving thermal performance.

3.3 Hot, dry climate considerations for NFIs

In hot, dry climates, shade from sunlight is the highest priority during the daytime since heat exhaustion and exposure are major concerns. Shade nets are commonly used, and heat radiation can be minimised by making a double-skinned roof with plastic sheeting.

Cold may also be a problem since temperatures often drop significantly at night. NFI selection should take into account both of these considerations. Additionally, thermal mass in shelters smooths out diurnal temperature variations and this can be created through roof and wall insulation.

Fig 3.5 ***NFI considerations for hot, dry climates***

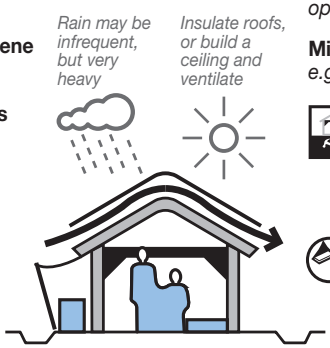
Considerations for
General Household Support Items

Protection from rain & sun
e.g. loose fitting clothing

Insulation from ground
e.g. mat or mattress

Food preparation and hygiene
e.g. cook sets and utensils

Facilitate outdoor activities
e.g. covered cooking area



Considerations for
Household Shelter Construction Support Items

Protection from rain & sun
e.g. plastic sheeting

Mitigate solar gain
e.g. adequate ventilation, small openings and thick walls

Mitigate water damage
e.g. surface water drainage

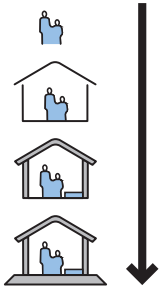
Stregthening against future hazards
e.g. tornado resistant structure

Considerations for
Household WASH Support Items

Protection from vectors
e.g. mosquito nets

The figure below illustrates priorities for distributing NFIs in hot, dry climates.

Fig 3.6 ***NFI priorities for hot, dry climates***



1. **Clothing** and **bedding** to control body temperature
2. **Covering** to protect from sun
3. Adequate **insulation** to protect from cold nights
4. Adequate **covering** and **flooring** to mitigate water damage

The considerations below are not intended to be prescriptive, but are to act as a basis for discussion with stakeholders for the selection of NFIs.

Tbl 3.3 ***Hot, dry climate NFI considerations***

1. Emergency phase considerations	
General Household Support Items may include:	
Floor mats	Nights can be cold in hot, dry climates; floor mats reduce conductive heat loss from the shelter (» see section 5.2.2).
Blankets	Consider distributing extra blankets (» see section 5.2.1).
Clothes	As above.
Cook sets	Including lids for cooking puts will improve the efficiency of cooking which may be important due to fuel scarcity.
Jerry cans, or buckets	Include a lid to stop entry of dust.
Household Shelter Construction Support Items may include:	
Plastic sheeting	Distribute sufficient plastic sheeting to create a double roof that includes a ventilated roof space (» see section 5.2.5).
Shade netting	For creating shaded outdoor areas.
Rope	-
Structural poles	Local scarcity of structural timber may lead to the importation of poles.
Pesticides or treatment	May be requires to prevent attack by termites or white ants.
Nails	-
Tools	-
Household WASH Support Items may include:	
Mosquito nets	May require complementary support to recipients (» see section 2.3)
2. Post-emergency phase considerations	
General Household Support Items may include:	
Lighting	Consider fuel scarcity when distributing lighting.
Brooms	Items with which the shelter can be cleaned.
Stoves	Fuel efficiency is likely to be the most important consideration due to fuel scarcity. Consider distributing materials for shaded cooking areas (» see section 5.2.4).
Household Shelter Construction Support Items may include:	
Forms	For mud bricks.
Shovels	To dig mud for bricks (» see section 5.2.9).
Storage vessels	For water to make mud bricks and concrete .
Mixing boards	For mixing concrete.
Replacement roofing	Consider thatch or CGI (» see section 5.2.6).

4 Selecting NFIs to combine into packages

Following a brief introduction on NFI packages, this section presents a four-step process for selecting and combining General Household Support Items and Household Shelter Construction Support Items as part of an NFI distribution programme. The process is repeated as often as necessary throughout the response, between the initial distribution through to durable solutions.

4.1 NFI packages

At a global level the IASC Water, Sanitation and Hygiene Cluster and the IASC Emergency Shelter Cluster have agreed the following packages for distribution, and have proposed guidance on the process of defining and specifying these packages at a country level[10] :

- **General Household Support Package**, usually containing items that can be distributed without additional instruction, promotion, or education, such as cooking sets, blankets, jerry-cans and buckets;
- **Household WASH Support Package**; usually containing items that need additional instruction, promotion, and/or education, such as mosquito nets and household water treatment; and
- **Household Shelter Construction Support Package**, usually containing items that need additional instruction, promotion, and/or education, such as tool kits and construction materials.

Post-emergency distributions of Household Shelter Construction Support Items are commonly delivered in phases, such as separate distributions for materials for a foundation, materials for a frame and finally materials for a roof. Distributing in such a way can help monitor the progress of construction, as well as reducing logistics delays.

Packages of items for shelter construction divide into three categories: packages that make an entire shelter; packages of materials to be used with existing structures; and materials that contribute to or repair a shelter.

Relevance

Packages with a consistent packed volume, weight and dimensions can simplify distribution and help with speed of supply. However, this should not be at the expense of meeting the needs of the beneficiaries.

Package contents should be consistent across all organisations working in a given response.

10 See section 8.4 for an excerpt from the proposed 'INTER-CLUSTER MATRIX - WASH/Emergency Shelter at Country Level'. The excerpt contains further details on these packages

Tbl 4.1 ***Advantages and disadvantages of packages***

Advantages	Disadvantages
Fast deployment is possible since packages are often pre-positioned in global, regional or national warehouses.	Increased packed volume of materials. As an example, blankets and clothes are best transported compressed into bales, rather than uncompressed in packages.
Reduced administration, simplified reporting and reduced paperwork from distribution sites.	Use of precious human resources to fabricate packages. Outsourcing package production may be beneficial.
More cost effective, in general, than providing tents. Therefore, packages can be the best way to maximise the shelter assistance that can be provided within a given budget.	Commonly, a 'one size of package fits all' approach is adopted. This may not be the most appropriate way to deal with individual needs of affected people or specific needs of vulnerable individuals. It will also lead to some redundancy with not all of the items being used by all of the recipients.
Reuse of the materials and long-term use of the tools supplied in packages is possible as recipients move beyond the emergency phase.	Delays can be introduced while waiting for specific items to be sourced and due to time spent re-packaging items as a package.
Help with programmes where there is limited staff capacity.	
Easier to monitor the supply chain of individual components, especially high values items.	
Flexibility, in some situations, to use packages in conjunction with existing materials such as timber or roof sheets or to repair damaged houses.	
Simplified distribution at the point of delivery to the end user.	

The International Federation of Red Cross and Red Crescent Societies (IFRC) Shelter Kit (» see section 8.5) is included as an example of a common basic package that can be modified for a specific disaster response.

4.2 Four steps for selecting NFIs for packages

This section presents a four-step process for selecting General Household Support Items and Household Shelter Construction Support Items for packages. These steps are introduced below, and elaborated upon further in this section.

These steps are illustrated below through an example based upon the response to the earthquake in Pakistan, 2005.

Tbl 4.2 ***Example of NFI selection matrix, based upon response in Pakistan, 2005***

Consult, monitor and evaluate

1 Research	2 Observe	3 Consult	4 Decide
General Household Support Items			
Clothing & bedding	Highest	Clothing by reclaim and national response. Insufficient blankets and sleeping mats	Local 'Chinese' blankets	Blankets
Stoves, fuel and lighting	Low	Open fires	Earthen fireplaces or metal stoves	Wood-burning stove with chimney
Cooking utensils	Medium	Some salvaged	Pans, plates, cutlery	Cook sets
Household Shelter Construction Support Items			
Walls (material and fixing)	Medium	Reclaimed materials, some timber, poor quality plastic, tents	Heavy earthen roofs	Tools and sandbags
Foundations	Not a priority		Built on soil	
Floor, insulated	Lowest	Earth floors	Made of earth	
Floor, raised	Lowest	Earth floors	Made of earth	
Insulation	Lowest		Heavy structure	No materials provided as insulation too low a priority
Doors & windows	Medium	Depends on shelter design		
Roof (covering, structure, fixing)	High	Reclaimed materials, some timber, poor quality plastic, tents	Heavy earth roofs	CGI sheet, plastic sheet, wire, rope, nails

Step 1: Research - What are the priorities?

1 Research

Operational experience, available good practice, and research of the local context together indicate likely priorities, such as responding to the extreme cold in Pakistan in winter 2005.

Survival

In the immediate days and weeks following the onset of an emergency, the appropriate and timely distribution of NFIs can save lives. General Household Support Items support survival through personal hygiene and nutrition, while Household Shelter Construction Support Items support adequate shelter from the elements, which can be of critical importance in responses such as that to the earthquake in Pakistan, during the winter of 2005.

Hazards

Following both conflict and natural disasters, affected populations may be at risk from ongoing or unrelated hazards, such as after-shocks of an earthquake or localised flooding. Ongoing hazards may be mitigated through siting or construction, for example in cyclone risk areas each element of the shelter must be connected strongly, or in seismic zones, additional cross-bracing or reinforcements may be required.

Security and protection

Security may be a major consideration, especially following conflicts. NFI distributions may contribute to security through distributing to safer areas, and to settlement and reconstruction options which maximise safety. Household Shelter Construction Support Items may contribute additionally through supporting visual and physical security, such as walls and lockable doors, or partitions to separate groups in collective centres.

NFI distributions have the potential also to create tensions if there are real or perceived inequalities between the assistance received by different disaster-affected groups, or between the affected groups and unaffected local communities.

Climate

Protection from cold and hot climates follows a general trend of priority: General Household Support Items such as clothing and bedding are usually of higher priority for survival than Household Shelter Construction Support Items. Except where prioritisation is critical, such as due to limited access in the emergency phase, it is usual to support protection from the sun, wind and rain (» see section 3).

Cultural norms

Perceptions of whether a shelter provides a suitable level of privacy or dignity vary between countries and can only be identified by consultation with all groups within affected and host communities. In some circumstances, privacy and dignity may be more important than climatic factors in selecting shelter items.

The Sphere Project has published common standards on participation, initial assessment, monitoring and evaluation which stress the consultation process as being an essential part of all programmes, including those that distribute shelter items.

Step 2: Observe - What do people already have?

Once an understanding of the situational context has been established, the next step is to determine which NFIs are already available to the disaster-affected population. This may include NFIs they already posses or have received in earlier distributions of the response, or those that they can purchase, forage or recycle.

Already possess

Where available, the results of assessments should provide details about which NFIs are already possessed by groups in the disaster-affected population, including what has already been received in previous NFI distributions.

It is common for many agencies to be involved in NFI distribution programmes. Therefore, it is important to coordinate with other organisations in order to know what NFIs they are planning to distribute to the same disaster-affected groups.

Salvaging and foraging

Commonly those who have been displaced have less access to materials than those who remain on or near their own land (» see section 2.2). If a disaster-affected population has no access to materials at all, it may be necessary to distribute NFIs from which entire shelters can be built.

Step 3: Consult - What are people used to?

While Step 1 considered the cultural norms which are important for the affected population, this step addresses which NFIs can be distributed to meet them.

For example, consider a disaster response in which the first priority was identified as clothing and bedding, and in which the affected population were found to already own basic clothing. Consultation and, if possible, participatory processes might contradict these priorities by identifying that the population prefers locally procured items, such as blankets and mats.

The consensus standards on participation presented in the *Humanitarian Charter and Minimum Standards in Disaster Response* (📖 The Sphere Project, 2004) provide useful guidance on how to assess what affected people are accustomed to, and how to ensure that all groups, including minorities, are involved in consultation.

Expectations of a disaster-affected population may change over time. From the initial emergency to the recovery phases of the response, standards should improve. Ongoing community participation and assessment, monitoring and evaluation activities should help to ensure that there is always an up-to-date understanding of the expectations of the disaster-affected population.

Step 4: Decide - What can be supplied to help?

In the final step, NFIs for distribution are selected. The selection of NFIs for distribution will need to support all affected groups, displaced and non-displaced, and take account of their varying needs and capabilities.

When deciding which NFIs will be included in the distribution, the following considerations are relevant:

- What is the quality, quantity, environmental impact and local market impact of local procurement?
- What are other humanitarian relief providers (e.g. local authorities, donor governments, international organisations, Red Cross/Crescent Movement, local and international NGOs, private partners, etc.) already planning to provide?
- What must be brought into the area from national or international sources?
- What can realistically be supplied and transported?
- What budgets are available?

All of this should take into account time frames, including anticipated seasonal variations. It may be necessary to trade-off the competing objectives of the speed of the response and the extent of NFI provision.

Distributions are often conducted in phases so that the most critical items can be delivered sooner.

5 Typical NFI specifications

This section contains specifications for ten items commonly distributed within shelter programmes. This section also includes an extensive list of NFIs with specific references where more information can be found.

Note: each organisation will have its own catalogues and procedures concerning the categorisation, specification, procurement and distribution of items. Shelter specialists should liaise closely with their procurement and logistics departments to ensure that programmes are consistent with organisational procedures. The specifications included here are included to inform that process of discussion, not to replace it.

5.1 Introduction to specifications

Purpose of specifications

Specifications are to:

- ensure that the performance of items is sufficient to meet the needs of recipients;
- promote consistency between organisations involved in a response; and
- ensure that there is clarity with suppliers about the specifications of items that are procured.

Types of specifications

Different types of specifications exist for different purposes:

- **Qualitative specifications** which identify how the materials are expected to perform, for example: 'fabric is strong and free from defects.'
- **Detailed design specifications** defining details, for example, the specification for a tent would include the number of stitches per metre and the type of fabric used.
- **Laboratory testable specifications**, for example, a strength test for tent fabric may be: 'minimum 500N (ISO 1421) in warp and weft'. Various international laboratory standards exist:

  ISO, International Organisation for Standardization,
  ℹ http://www.iso.org

  BS, British standards
  ℹ http://www.bsigroup.com/

  ASTM, American Society for Testing and Materials
  ℹ http://www.astm.org

  DIN, Deutsches Institut für Normung e. V.
  ℹ http://www.din.de

In general more detailed specifications are more suitable for large scale procurement purposes as they are clearly testable. However some suppliers, especially local or smaller scale suppliers, may not be accustomed to using them. Accepting and keeping a sample of each item to compare it with items delivered may be a more practical solution especially for local procurement.

5.2 Specifications for ten items commonly distributed within shelter programmes

This section contains specifications for ten items commonly distributed within shelter programmes:

General Household Support Items

5.2.1 Blankets and quilts
5.2.2 Bedding: mats, mattresses and beds
5.2.3 Cook sets
5.2.4 Stoves and fuel

Household Shelter Construction Support Items

5.2.5 Plastic sheeting as a covering
5.2.6 Corrugated Galvanised Iron (CGI)
5.2.7 Bricks, blocks and binders
5.2.8 Fixings: rope, wire, nails, metal strapping
5.2.9 Tools
5.2.10 Tents and shelters

5.2.1 Blankets and quilts

There are three main types of blankets and quilts:

- **woven blankets,** which are made of wool, new fibres, or recycled fibres from second hand clothes;
- **fleece blankets,** which are made of pure polyester. They are as efficient as woollen blankets, with better ability to dry, and feel more comfortable when in contact with the skin; and
- **quilts,** which are made of synthetic material or fibres covered by a synthetic sheet (commonly polypropylene). Quilts are very different from woven blankets and not appropriate for all cultures. Quilts are recommended for cold countries only.

In some circumstances sleeping bags may be provided. Vulnerable groups, including older people, ill people and young children, may need warmer blankets.

Technical recommendations

Thermal resistance: where applicable, a minimum TOG value of 2.5 is suggested. Higher values may be required for colder climates. Note that local suppliers may not be able to provide TOG values.

Technical note: thermal resistance

Thermal resistance is commonly quoted as a TOG value, a measurement of how well a material resists heat flow. The higher the TOG rating, the better the insulation.

Thermal resistance can also be quoted as an R-value, measured in $(Km^2)/W$. The relationship between R-value and TOG value is: R-value = 10 x TOG value. A heat transfer coefficient, known as a U-Value, may also be quoted, and is measured in $W/(m^2K)$. U-Value is related to the other parameters as follows: U-Value = 1/(R-Value) = 1/(10 x TOG value). TOG values can only be accurately tested in a laboratory.

Weight and volume: suitable blankets commonly lie within the range 300-850 g/m^2. This corresponds to a weight 1-2 kg each.

Size: 2 m x 1.5 m is the most common blanket size. Polar fleeces and quilts are often larger. Some organisations deliver child blankets, intending that their small size will ensure that only children use them.

Thickness: specified thickness refers to the blanket in a packed, compressed state.

Strength: the strength of a blanket is a useful indicator of its quality and durability. A tensile strength of 25 kg in both warp and weft is a commonly adopted standard.

Colour: most blankets are brown grey or dark coloured for practical reasons. Some cultures may have sensitivities about certain colours.

Finishing: most blankets have either ribbon borders or have whipped stitching on the edges to prevent blankets fraying.

Shrinkage: most blankets have shrinkage tests included in their specifications. Generally, the maximum shrinkage after hand washing at 40°C is less than 8%.

Fungus and moths: blankets should be free from fungus damp, mould or moths. Any treatments should be nontoxic and with hypo-allergenic products. (📖 WHOPES, 2006)

Packing: blankets should be clean, compressed into bales and marked for easy transportation and stock management. If blankets are being airlifted they should be compressed and put into packages before transport.

5.2.2 Bedding: mats, mattresses and beds

Mats, beds and mattresses include:

- mats made of woven straw or plastic strips;
- mats based on closed cell foam;
- mattresses made of foam or composites of materials; and
- beds with steel or wooden frames.

Mats, beds and mattresses help keep people warmer at night by reducing conductive heat loss to the ground. This is especially important in cold climates and during winter in warmer climates.

Procurement and transport

The major insulating material in mats and mattresses is usually trapped air. As a result they often have a large packed volume and are relatively expensive to transport. For this reason, organisations do not usually maintain stockpiles of mattresses, although some do stock closed cell foam mats. Therefore, mattresses are often procured from local or regional supplies.

In environments where access is limited, clear agreement is required to ensure that the transportation of mattresses is suitably prioritised in relation to other NFIs.

Seasonal material availability

Grass, reed or palm mats may not be available in all seasons. If there is a plan to use these mats, provision may need to be made earlier in the year, taking account of the harvesting season. Avoid harvesting in the season when the grasses seed, since this can reduce future crops.

Appropriateness

Mattresses are often procured locally and so the choice of which materials to use for mats, mattresses and beds may be limited. Those used should be culturally acceptable.

Produced in various sizes

Given the variability of available mattresses, those supplied in a given response should be of a consistent size to avoid tensions developing over perceived or real inequalities in what is supplied to different groups.

Technical recommendations

Insulation value: can be defined as a U-Value or TOG value (» see technical note in section 5.2.1)

Mattress foam density: foam density is a key indicator of mattress quality. A minimum foam density for a bed mattress should be 22 kg/m³ (1.37 lb/ft³).

The firmness is defined by the indentation load deflection. This factor is the amount of force required to indent a sample of foam to 25% of its original height. It may vary from 5 to 100 kg.

Tbl 5.1 ***Foam density of mattresses***

Grade	Low	Medium	High
Foam density	18 to 22 kg/m³	22 to 27 kg/m³	> 27 kg/m³

Covering: for covered mattresses, coverings should be easily removable to allow them to be washed.

Fire: mattresses should not produce toxic fumes when burnt and should not be easily flammable.

Waterproofing: all mattresses and mats should be kept dry by ensuring that they are separated from the ground by a waterproof membrane. Additional plastic sheeting, timber or cement may be required to separate the bedding from the ground.

Rot/decay: natural straw mats may rot very quickly and are more difficult to wash. However, they may be the most commonly available and are frequently used.

5.2.3 Cook sets

Cook sets, also known as kitchen sets, are combinations of pots, pans, plates, cups and cutlery for the food preparation and serving needs of a household. They are commonly designed to enable cooking and serving food for five people.

Cooking stoves (» see section 5.2.4), methods and utensils vary significantly between cultures, so cultural considerations should be taken into account when assembling cook sets.

Materials

All pots and pans should be made from aluminium or stainless steel of equivalent strength and durability. Appropriate laboratory tests for the quality of steel and aluminium are included in the ICRC/IFRC catalogue (ICRC/IFRC, 2009).

Woks are commonly made of cold hammered common mild steel.

Handles for pots should be made of aluminium or stainless steel and attached with strong rivets or bolts. The end of the handle should be bent beyond a 90 degree angle to provide a hanging hook for the pot.

Thickness

- **pots/pans:** minimum 1.75 mm for aluminium, 0.80 mm for steel
- **bowls:** minimum 1.00 mm for aluminium, 0.50 mm for steel
- **cutlery:** minimum 1 mm (back of knife blade)

Finishing

There should be no unfinished sharp edges (the cutting edge of knives is finished). Kitchen sets are commonly a selection of some or all of these items with a bucket.

Tbl 5.2 ***Example contents for cook sets***

Item	Comment	Size	African/ European cultures	Some Asian cultures
Cooking pot	With lid that also fits frying pan	7 l	1	1
Wok	Black steel	7 l	0	1
Frying pan	With lid that also fits the 7 litre cooking pot	2.5 l	1	0
Cooking pot	With lid	2.5 l	1	0
Bowl	Aluminium or stainless steel	2.5 l	5	5
Plate	Aluminium or stainless steel	0.75 l	5	5
Cup	Aluminium or stainless steel – or 'unbreakable' plastic	0.3 l	5	5
Table spoon	Stainless steel	15 ml	5	0
Table fork	Stainless steel	20 cm	5	0
Table knife	Stainless steel	17 cm	5	0
Chopsticks		25 cm	0	5
Kitchen knife	Stainless steel blade, wood or plastic handle	15 cm	1	1
Wooden spoon	Hardwood, min. handle diameter 10 mm	30 cm	1	1

5.2.4 Stoves and fuel

Stoves must be selected with consideration of access to fuel and the heating and cooking customs of the recipients. The key domestic energy types are listed below:

- **biomass,** including wood, charcoal, animal dung, sawdust, briquettes;
- **fossil fuels,** including kerosene, diesel, gas, coal;
- **electricity;** and
- **other energy sources,** including solar power and biogas. These require levels of community education and involvement that may not be possible in emergencies.

The need to collect fuel often leads to serious protection and environmental issues. In some circumstances fuel will need to be distributed. Distribution of inappropriate or comparatively expensive fuels will lead to them being re-sold on the market rather than being used by the original recipients. Similarly distribution of stoves that use a relatively expensive fuel may lead to them being resold.

More than just a stove and fuel

If stoves are to be distributed, they should be accompanied by additional measures to reduce household energy needs. In many circumstances such as tented camps, stove distribution should be accompanied by fire safety measures, for example the formation of fire committees. In some cases, with training, mud stoves can be made by house owners themselves.

Cooking and heating

In cold seasons or climates, where fuel is limited, cooking often takes place at the coldest times of day or night; this allows the fuel being burnt for cooking to also be used for heating. As a result, in many circumstances the stoves may be designed and used for both cooking and heating.

Stoves designed to heat a room are often designed differently from stoves designed for cooking alone. Fuel efficient cooking stoves are designed to conduct heat to the cooking pots, whilst space-heating stoves are designed either to radiate heat or to heat the room by convection.

Efficiency

Stoves should be sized appropriately to the volume of fuel available. For stoves without a space-heating function, this may mean that the internal volume should be relatively small to ensure that the maximum heat is delivered to the cooking pots.

Stoves should be designed to burn the fuel at high temperature. Pieces of solid fuel should be dry and cut into smaller pieces to ensure hotter combustion. Distribution points are a good place to encourage this.

Ensure that as large a proportion as possible of the combustion gases is used. Stove designs commonly achieve this by controlling the flow of air into the stove and by controlling the exit of flue gases. Efficient stoves are often designed to encourage secondary combustion by re-igniting flue gases. Adding a controller flap to the flue pipe to limit the rate at which exhaust gases leave the stove can also help with efficiency.

Flues

Stove flues are essential for solid fuel stoves that are to be used indoors and to be encouraged for fossil fuel stoves.

Safety

Stoves should be made of materials that do not emit toxic fumes when heated. They should be designed so that they do not tip or fall over. Sand buckets were provided to stove recipients after the 2004 tsunami in Tamil Nadu, India.

Acute respiratory infections

ARIs caused by smoke from cook stoves is a leading cause of death and illness for women and children in humanitarian contexts. Consideration should be given to these risks when choosing stoves, fuel and flues. Fuel efficiency and smoke reduction measures can be implemented, for example by ensuring that families have dry places to store biomass fuels.

UNHCR (2002a). Cooking Options in Refugee Situations: A Handbook of Experiences in Energy Conservation and Alternative Fuels

5.2.5 Plastic sheeting as a covering

Plastic sheeting is also known as plastic tarpaulin, tarp or polythene sheet. It is a sheet of strong, flexible, waterproof material. It should always be considered as a possible material for distribution along with rope, wire or nails and materials from which a shelter could be built.

Although different qualities of plastic sheeting exist, those suitable for humanitarian relief are made from polyethylene to standards that were effectively agreed between major organisations in the 1990's. Some of the specifications such as UV resistance can only be found by detailed laboratory testing. As such, it may not be possible to verify all of the specifications when sheeting is procured locally.

A standard sheet has a black woven core and is laminated on both sides. All plastic sheeting must reach minimum performance standards outlined below. Transparent versions and heavier duty versions may be used for windows or ground sheets.

Standard plastic sheeting is commonly available in 4 m wide rolls, or in sheets, measuring at least 4 m x 6 m. 7 m wide sheets have shown to be more useful for building tent-like structures, however the pros and cons of increasing the size of plastic sheeting, versus overall coverage of the population, will have to be weighed by decision makers in consultation with local stakeholders.

Also consider shade nets for some applications.

Standard specification:

Weight: 200 g/m^2 ± 5% (ISO 3801). Add 10% for reinforcement. Lighter versions that meet the material performance specifications below might also be considered.

Core material: woven fabric High-Density Polyethylene (HDPE). Black colour, as this provides privacy, reduces heating under the sheeting due to the sun and is the cheapest way to reduce UV degradation.

Lamination material: Low-Density Polyethylene (LDPE). This should be white in colour on at least one side since white reflects heat better in hot climates.

Reinforcement: eyelets (sheets only) or reinforcement bands (rolls and sheets).

- **Option 1: eyelets (on edges),** one strong aluminium eyelet every 1.00 m ± 5% on edges. Sealed on all sides (or 2 sides heat sealed and two sides double stitched), with nylon or HDPE ropes in hem.
- **Option 2: reinforcement bands,** 6 grey bands of 7.5 cm width made from black woven HDPE laminated on both sides.

Tensile strength: outside of reinforcement bands, minimum 500 N (ISO 1421) or minimum 600 N (BS 2576 50 mm grab test, US equivalent test ASTM D751). For reinforced tarpaulin only: inside of reinforcement bands, Minimum 700 N (ISO1421).

Tear strength outside of reinforcement bands: minimum 100 N (under ISO 1421 or BS 4303 wing tear).

Bursting strength: not necessarily specified, 200 N/cm^2 (BS 4768).

Welding: maximum 1 welding along the middle. (This means that sheets or rolls are made from two panels). Minimum 80% of the original tarpaulin strength in the weft.

UV resistance: maximum 5% loss on original tarpaulin tensile strength (ISO 1421) after a minimum of 1500 hours UV under ASTM G53/94 (UVB 313 nm peak).

Packing: sheets packed in bales of five or ten, wrapped in polyethylene, sealed with a polyester band.

Rolls: folded in the middle and wound. Wrapped in polyethylene and sealed with a polyester band.

- IFRC/Oxfam (2007). Plastic sheeting: a guide to the specification and use of plastic sheeting in humanitarian relief
- ICRC/IFRC (2009). Emergency items catalogue
- MSF-B/Shelter Centre (2006). Shade nets: Use, Deployment and Procurement of Shade Netting in Humanitarian Relief Environments

5.2.6 Corrugated Galvanised Iron (CGI)

Corrugated galvanised iron is also known as corrugated iron, zinc sheet or abbreviated as CGI.

Corrugated aluminium sheet also exists but is rarely used as it is usually more expensive. Various 'plastic sheets' and 'tarred sheet' are also used in some countries. When planning to distribute CGI, ensure that recipients also have access to the fixings and wood or steel which are necessary to build the shelter.

Coating

CGI often has a zinc carbonate coating which protects the iron from rusting. The zinc coating can usually be identified by the crystalline pattern. Alternative coatings include zinc rich paints.

Painting the zinc coated iron sheet will further increase its life-span. Painting also reduces heating in sunlight. It is necessary to wait some time before painting CGI to allow the greasy protective layer applied in the factory to wash off.

On a visual inspection there should be no gaps or bubbles in the coating. It should not easily scratch or rub off. 'Coating thickness gauges' can be bought to measure the thickness of galvanised layers.

Corrugations

Once coated with zinc, the flat sheet is rolled on a press to leave a corrugated pattern. Corrugations make the sheet more rigid. They can be described by the depth (the height from the top of a crest to the bottom of a trough) the pitch (the distance between two crests). Corrugation patterns may vary between manufacturers.

Tbl 5.3 ***Conversion table sheet thickness in Standard Wire Gauge (SWG)***

					Sggst. min. for CGI		Not advisable for CGI for uses such as roofing as it may not withstand snow and other dynamic loads		
SWG	**18**	**20**	**22**	**24**	**26**	**28**	**30**	**32**	**34**
mm	1.219	0.914	0.711	0.559	0.457	0.376	0.315	0.274	0.234
inches	0.048	0.036	0.028	0.022	0.018	0.015	0.0124	0.0108	0.0009

Note: other wire gauges are used such as the American Wire Gauge (AWG). Quoted here is British Standard (Imperial) Wire Gauge (SWG). This was detailed in BS 3737: 1964, a standard that has now been withdrawn.

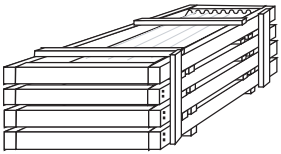
Technical recommendations

Thickness: usually quoted in SWG (see conversion table left) with a tolerance of ±5%. Suitable standards should be agreed locally. Thinner gauge sheeting will not last as long and is more likely to fail in high winds. Note the lower the gauge number, the thicker the sheeting.

Dimensions: dimensions quoted with a tolerance of ±5mm. Dimensions should be appropriate to construction. With smaller sheets there is more wastage due to overlap between sheets. Larger sheets may be harder to transport.

Corrugations: pitch and depth should be uniform. This allows the sheets to be stacked easily and to overlap neatly when making a join.

Packing: if they are being airlifted, bundles of sheets of CGI should be packaged in a sturdy wooden box. This is especially critical if the CGI is under slinging with a helicopter or being stored on or near an airfield.



Health and safety

Ensure that handling staff are equipped with gloves and sturdy boots to prevent injury, and that a first aid package is available at loading and off-loading locations.

5.2.7 Bricks, blocks and binders

Bricks are most commonly made from clay or soil which is either sun dried or burnt. Blocks are made from cement and aggregate which is left to cure.

Making bricks can require significant amounts of water. This should be considered when working in dry environments. They also can leave unfilled pits which become a breeding ground for mosquitoes.

Earth and soil

Earth and soil are equivalent terms for the loose material on the surface of the earth that contains ground up minerals and organic material. Most soils contain grains of various dimensions and composition.

Local builders will usually know where to find soil appropriate for building. Unknown soils should be tested[11] before being used for construction or block making. Poor quality soils can commonly be improved by adding naturally available stabilisers such as sand, clay, ash, straw, or dung or manufactured stabilisers such as lime, Portland cement, gypsum or molasses. The addition of other materials, such as sawdust for unburnt bricks, can improve thermal insulation but can also reduce strength.

Binders

Lime, cement and pozzolanas are used either to bind blocks or stones together or for casting on site.

Lime is formed by burning limestone (calcium carbonate) which can be found in some mineral deposits, chalk, coral, and shells. Lime kilns produce quicklime, a material that needs to be slaked (to have water added) to form hydrated lime before it can be used in construction (note that slaking lime produces considerable heat and is potentially dangerous). Hydrated lime is available as dry hydrate, milk of lime or lime putty.

Cement is a dry powder made in large scale factories by processing limestone, clay and gypsum.

Pozzolanas can be natural (such as volcanic ash) or artificial (such as fly-ash) and contain alumina or silica. If they are finely ground and mixed with lime they will set like cement, or they can reduce the cost of cement work if mixed with cement in moderation (15-40%).

Burnt bricks

Burnt bricks are the result of chemical reaction that takes place when soils containing 20% to 50% of clay are burnt. To make burnt bricks, clay soil should be sorted (removing roots, stones etc), crushed (removing lumps), sieved (removing particles larger than 5 mm), proportioned (mixing with other materials to ensure the correct weight of brick), and tempered (mixing and adding water). Finally they should be air dried before being

11 Mukerji and Stultz (2005)

put in the kiln. Local manufacturers may not always follow these steps properly, leading to poor quality bricks.

Brick kilns

There are several different types of kiln. Depending on the type of wood, between 150 g and 1 kg of fire wood are required to make one brick. Brick kilns require large amounts of fuel wood and this should be factored in when considering whether to use burnt bricks instead of timber for construction.

Small local businesses sometimes operate simple field kilns. However, these are often inefficient and do not produce good quality or uniform bricks.

Testing bricks

A simple test for brick strength is to drop them from approximately 1 m onto a hard surface. If they break they should be rejected. Burnt bricks may also be tested by immersing them in water to check if they have been sufficiently fired.

Common defects with bricks

- **Partially fired:** in many types of kiln not all of the bricks are fully fired (especially those nearer the edges of the stack). In this case they will not resist water or have the same strength.
- **Poor clay mix:** if the brick is poorly made it will lack the strength and often be heavier than standard bricks.
- **Lime blowing:** is caused by hydration of quicklime in the fired bricks, causing the bricks to rupture or break.
- **Efflorescence:** is caused by soluble salts dissolved in the brick.

Transportation

Allow 5-10% for breakages during transport. Sun dried bricks are commonly procured more locally and are more difficult to transport without breaking than burnt bricks.

Health and safety

The World Health Organization does not recommend the use of materials containing asbestos including asbestos cement roofing sheets in emergencies.

5.2.8 Fixings: rope, wire, nails, metal strapping

When planning to distribute covering materials such as corrugated iron or plastic sheeting, always ensure that people have access to the fixings required to attach them to a frame. Covering materials are safer and last longer when properly fixed.

Rope

Rope is commonly made of natural fibres, polypropylene, nylon, or other polymers. Properties of the most common types of rope are listed below (📖 MSF Logistic Catalogue, 2008):

Tbl 5.4 ***Properties for common types of rope***

	Natural fibre	Polypropylene	Nylon/polyester
Strength		+	++
UV resistance	+++		+
Elasticity	+	++	++++
Wear resistance	+	+	+
Resistance to rot		++++	++++
Cost	Cheap	Average	Expensive

Rope specification: specifications for rope should include the material that it is made from (natural fibre, nylon and polypropylene), its width, length and strength. When considering synthetic rope, note that dark coloured ropes usually have a higher carbon content and tend to be more resistant to UV light.

Strength: the strength of ropes is commonly given as the load that can be withstood before breaking. As a guide the breaking strain should be at least three times the anticipated strain that the rope will hold.

Wire

Wire is commonly used for fixing bamboo or timber poles. It is also used in reinforced concrete.

When used for binding timber or bamboo, wire should usually be 22 SWG or thicker (» see conversion table in section 5.2.6) and galvanised to prevent rusting. When used to tie reinforcement bar together in reinforced concrete, wire is commonly annealed (heated to reduce brittleness).

When wire is distributed, pliers may be required to help tighten and cut the wire.

Nails

Standard nails are made of iron. There are many types of nails, each used for different purposes. Perhaps most commonly used in emergencies are common wire nails, which have a smooth shank and a flat head. Roofing nails should always have a twisted shank and usually a wide flat or domed head to hold roofing sheets down. Roofing nails are often used with rubber washers and are commonly galvanised.

Size: nails are commonly defined by their length and their width, i.e. a 100 x 4 nail is 100 mm long and 4 mm wide. Smaller nails are defined using the steel wire gauge (which differs from the standard wire gauge), but the larger the number, the thinner the nail.

Care should be taken to ensure that nails are not oversized – the thicker they are, the more likely they are to split the wood.

Finish: untreated nails are most common in construction in developing countries. Nails which are zinc-galvanised are less susceptible to rusting, though are more expensive.

Shanks: the shank is the main length of the nail. Most commonly shanks are smooth. Nails with rings or spirals on the shank of the nail will hold the wood stronger but be harder to re-use.

Heads: flat heads allow the nails to be removed more easily and re-used later if required.

Tbl 5.5 ***Approximate number of wire nails per kilogram (kg)***

Length (mm)	18	25	31	38	44	50	63	75	88	100
Length (inches)	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4
Nails per kg	4500	2425	1365	880	620	375	240	110	100	70

Metal strapping

Metal strapping is commonly used for increasing the strength of a timber joint. It is sometimes difficult to obtain in local markets, but can be cut from galvanised sheet.

IFRC/Oxfam (2007). Plastic sheeting: a guide to the specification and use of plastic sheeting in humanitarian relief

5.2.9 Tools

There are many different types of tool commonly used and distributed in relief operations (» see section 5.3 for a more extensive list). Different tools will be available in different locations, so tool kits may need to be adapted locally (» see section 7, Case Study Myanmar 2008).

It is worth investing in good quality tools. If the handle of a hammer breaks before the construction of a shelter is completed, the funds and the time expended to deliver it have been wasted. In most cultures, both men and women use tools for shelter repair.

Metal quality and composition

Cheaper tools tend to be made of cast iron whilst better quality tools tend to be made of forged steel. Casting is a process where molten iron is simply poured into moulds. With forging the metal is shaped using compressive forces, commonly by heating it first.

Metal can be laboratory tested by analysing the chemical content and testing factors such as the Rockwell hardness (a scale based on the how easy it is to dent the metal). An example of some of the composition tests are copied from an ICRC/IFRC catalogue (📖 ICRC/IFRC, 2009) below.

Tbl 5.6 ***Select specifications for steel from ICRC emergency relief items catalogue***

	Digging tools	Cutting tools
	Hot forged carbon steel, hardened and tempered, hardened zone to maximum half of the bank of the blade	Hot forged carbon steel, hardened and tempered, hardened throughout the entire blade, but remaining normalized past the first rivet hole
Carbon content	0.4% to 0.5%	0.6% to 0.65%
Manganese content	0.5% to 0.8%	0.6% to 0.8%
Silicone	0.25% maximum	0.30% maximum
Phosphorus and Sulphur	0.06% maximum	0.03% maximum

Handles

It is generally good practice to provide tools with handles. Failure to do so will encourage local deforestation. Where handles are to be supplied separately, ensure that people have access to the materials needed to fit them. If handles are to be supplied, indicate the required minimum length, diameter and type of wood. Usually they are made from straight-grained, knot-free hardwood.

Weight

When procuring tools locally in bulk, procurement is sometimes done by weight.

Packaging

Tools are commonly distributed in a box or a sack for ease and safety when handling them. Safety gloves and boots are often ignored but should be considered.

Repair

It should be possible to sharpen or repair tools locally so that they may used in the long-term. Sharpening stones or files may be distributed with the tools. It should be possible to repair and attach handles if they break.

ICRC/IFRC (2009). Emergency items catalogue

5.2.10 Tents and shelters

Tents are portable shelters that include both a fabric cover and a structure. They are used when it is not possible to find shelter with family members or in existing buildings, and it is not possible to construct shelters using local materials quickly enough.

In order to be effective and durable, tents must be manufactured from quality materials and meet detailed specifications.

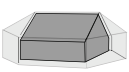
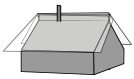
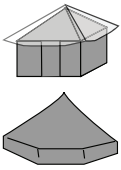
A tent may be required to perform different functions in different seasons (» see section 3), for example minimising solar gain in hot seasons, or providing adequate provisions for heating of the internal volume in cold seasons.

Currently, there are many types of tents used in relief operations, and at present there is no agreed inter-agency standard, although ICRC, IFRC and UNHCR have agreed the Family Tent specification summarised in this section.

A procurement specification for a tent is usually a document running into many pages. Specifications should include details of the types of materials being used as well as details of the stitching, fixings and accessories such as pegs and packaging. Failure to adequately specify tents may make it difficult to resolve issues with suppliers and lead to poor quality or unsuitable tents being delivered.

Many of the tent designs used commonly in relief operations do not meet the consensus indicators for covered living space described in the *Humanitarian Charter and Minimum Standards in Disaster Response* (📖 The Sphere Project, 2004). Agencies should, however, always make every effort to meet international standards and indicators.

Tbl 5.7 ***Common types of tent***

Type	Family Tent	Lightweight Emergency Tent (LWET)	Ridge tent	Centre pole tent	Frame tent or transitional shelter
					
Details	Ridge tent with raised walls and extended fly sheet at ends	Tunnel tent with fibre glass poles and synthetic covering	Metal poles form ridge with cotton based canvas flysheet	Canvas tent with one large pole in the centre May have poles to raise walls	Solid metal frame tent with synthetic covering material
Covered area	16 m^2 plus two vestibules	15-21 m^2	12-16 m^2	12-24 m^2	12-28 m^2
Weight	55 kg	42-60 kg	75-85 kg	50-120 kg	50-120 kg

There is ongoing work to develop 'transitional shelters' that can be stockpiled and distributed like tents. Transitional shelters offer shelter from the emergency throughout any displacement until sustainable, durable solutions are achieved, such as through reconstruction. Transitional shelters are designed so that they can be disassembled, relocated or upgraded later on.

Winterised tents

In some extreme cases it is necessary for people to live in tents in cold climates. When this happens additional care must be made to ensure that tents are of suitable quality. Following the South Asia earthquake in Pakistan 2005 it was estimated that over 80% of the tents distributed were not suitable for the winter conditions encountered there.

For a tent to be habitable in cold climates, it must:

- fully resist rain and wind, keeping it dry and free from draughts inside. Insulation from the wind is more critical than thermal insulation. Note that even well designed and fabricated family tents allow significant air flow between the interior and the exterior of the tent if they are not winterised;
- be large enough for a family to live in, according to locally agreed criteria. A minimum of 3.5 m^2 living space per person is recommended (📖 The Sphere Project, 2004: p 219), and agencies should always aim to provide this;
- have at least two layers of fabric to help reduce draughts;
- have flooring and mattresses to minimise conductive heat loss;
- have roof and wall insulation, in extreme cold climates where required;
- must include a non-flammable areas of fabric to allow a stove chimney to pass through safely;
- be strong and durable enough to resist both high winds and snow loading for the entire winter; and
- have rot proof mud flaps of suitable quality and length to allow the tent to be dug into the ground.

The UNHCR/ICRC/IFRC Family Tent

The Family Tent is the standard UNHCR/ICRC/IFRC tent for a family of 5 persons, following the recommended minimum living area in hot and temperate climates (3.5 m^2 per person), and providing additional space for cold climates. In cold climates, it is advisable to supply the 'Kit, Improved insulation for Family Tent' as specified in the *Emergency Relief Items Catalogue* (📖 ICRC/IFRC, 2009).

Tents are not seen as a long-term habitat solution. This tent is meant for emergencies and has a minimum life span of 1 year in all types of climate.

This tent has a minimum shelf life of 5 years under normal warehousing conditions (a dry, clean, and ventilated warehouse, elevated from the ground, and not piled; storage on pallets and pallet racks). This tent is sensitive to rain and moisture when packed.

The final product must be able to withstand 75 km/h wind, to be strongly attached to the ground and tensioned without any damages. When closed, the tent must give a good protection against dust, wind, rain, snow, insects and small crawling fauna. Minimum roof load to be 300 N/m² under ISO8937 (snow load for camping tent). The maximum final packed tent weight must not exceed 55 kg.

The *Emergency Relief Items Catalogue* (📖 ICRC/IFRC, 2009) contains detailed specifications for the Family Tent, the contents of which are summarised in the following list:

- **Materials:** for the outer tent roof canvas, the outer tent wall canvas, the inner tent canvas, the polyethylene fabric for the mud flaps, the polyethylene fabric for the groundsheet, the mosquito net for the inner tent doors and windows, the guying points of the outer tent, and the hammer.
- **General points for the finished product:** on performance, seams and stitching, ropes, webbing bands, toggles, loops, reinforcement nettings, and all other accessories, zip fasteners, eyelets, metal rings, dimensional tolerance, and long storage.
- **Make up of the outer tent:** comprising a general description of the outer tent, dimensions/erecting system, reinforcements, attachment system (guy lines), side windows, ventilation half cones on top of the vestibules, outer tent doors, side walls, vestibule walls, mud flaps, chimney reinforcement, and other accessories.
- **Make up of the inner tent groundsheet:** comprising a general description, inner tent dimensions, inner doors, inner tent suspension system, inner tent ventilation system, inner tent windows, accessories inside the tent, ground sheet, chimney reinforcement, and optional inner liner.
- **Poles and accessories:** covering poles, ridge beam, upright poles, side poles, ropes, loops, guy runners, pegs, and accessories.
- **Packing:** describing the standard package and the optional package.

📖 UN/OCHA. (2004). Tents: a Guide to the Use and Logistics of Family Tents in Humanitarian Relief

📖 ICRC/IFRC (2009). Emergency items catalogue

5.3 Further specifications for NFIs

The next nine pages contain a list of the most commonly used and distributed shelter sector items. Against each item is indicated:

- the catalogues or references that contain a description, or a procurement specification;
- whether the item is often stockpiled internationally or locally procured;
- where links and overlaps exist with other sectors, clusters and divisions within organisations; and
- whether the item is particularly sensitive to culture or climate.

Note: each organisation will have its own catalogues and procedures concerning the categorisation, specification, procurement and distribution of items. Shelter specialists should liaise closely with their procurement and logistics departments to ensure that programmes are consistent with organisational procedures. The specifications included here are included to inform that process of discussion, not to replace it.

Further reading/specifications

Numbering in the tables on the following pages corresponds to the following titles (» see section 8 Bibliography):

1 ICRC/IFRC (2009)
2 MSF (2008)
3 Oxfam (2007)
4 UNHRD (2008)
5 UNDP/IAPSO (2000)
6 UNHCR (2007)
7 see section 5.2
8 WHO (2005)
9 Corsellis and Vitale (2005)
10 MSF-B/Shelter Centre (2006)
11 Mukerji, K. and Stultz, R. (2005)
12 IFRC/Oxfam (2007)
13 Ashmore, J. and Fowler, J. (draft, 2008)

The following table is intended to provide a general overview of NFIs common to shelter programmes and complementary programmes. Shelter specialists should consult their procurement and logistics departments regarding detailed specifications, standards and procurement, and approach other clusters for agreement in areas of overlap (» see section 2.1.1).

Tbl 5.8 ***Table of NFIs***

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors: WASH cluster	Overlap with other sectors: Health cluster	Overlap with other sectors: General relief	Comment
Clothing	Clothes, underwear			✓	✓		✓	Sometimes included in hygiene packages Climate and culture sensitive
	Clothes, outer	1, 9	✓	✓			✓	Climate and culture sensitive
	Newborn baby kit			✓				Climate and culture sensitive
	Sewing kit			✓				
	Footwear, sandals			✓			✓	Climate and culture sensitive
	Footwear, shoes			✓			✓	Climate and culture sensitive
	Footwear, boots	4		✓				Climate and culture sensitive
Bedding	Sleeping mat	1, 7						Climate and culture sensitive
	Bed	7						
	Mattress	1, 5, 7, 9		✓				
	Blanket, lightweight	1, 2, 3, 4, 5, 6, 7, 9	✓				✓	Climate and culture sensitive
	Blanket, heavy weight	1, 4, 5, 6, 7, 9	✓				✓	Climate and culture sensitive
	Bed linen			✓				
	Hot water bottle							
	Quilt, lightweight	7						Climate and culture sensitive
	Quilt, heavy weight	1, 4, 7						Climate and culture sensitive

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors: WASH cluster	Overlap with other sectors: Health cluster	Overlap with other sectors: General relief	Comment
Complete shelter	Tent, family, hot climate	1, 2, 3, 4, 5, 6, 7, 9	✓				✓	Useful life ranges from 1 to 24 months depending on quality Further tents may have to be distributed if longer lasting solutions delayed Climate and culture sensitive
	Tent, family, cold climate						✓	Further research and development required Useful life ranges from 1 to 24 months
	Prefab							Generally NOT advised, (📖 The Sphere Project, 2004) Climate and culture sensitive
	Container	2						Generally NOT advised, (📖 The Sphere Project, 2004) Climate and culture sensitive
Structure	Aggregate, sand	9, 11		✓				
	Aggregate, gravel			✓				
	Cement	1, 5, 7, 9		✓				Water requirement
	Lime	7, 9, 11		✓				Water requirement
	Pozzolana	7, 11		✓				Water requirement
	Brick, burnt	7, 9		✓				
	Brick, unburnt	7, 9, 11		✓				

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors			Comment
					WASH cluster	Health cluster	General relief	
Structure	Block, cement	7, 9, 11		✓				
	Stone	11		✓				
	Steel, reinforcement	5, 9, 11		✓				
	Steel, beam			✓				
	Timber, sawn	1, 9, 11, 1, 3		✓				
	Timber, poles	9, 11, 13		✓				
	Timber, bamboo	9, 11, 13		✓				
Insulation*	Natural material							
	Man-made material							

* thermal insulation and insulation against capillary moisture

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors: WASH cluster	Overlap with other sectors: Health cluster	Overlap with other sectors: General relief	Comment
Covering	Plastic sheeting	1, 2, 3, 4, 5, 7, 11, 12	✓		✓		✓	Climate sensitive
	Plastic sheeting, heavy weight	9, 11, 12						
	Plastic sheeting, translucent	1, 9, 11, 12		✓				
	Canvas tarpaulin						✓	
	CGI sheet	1, 7, 9, 11		✓				Climate sensitive
	Mats	11		✓				
	Shade net	2, 11						Climate sensitive
	Timber, boards	1, 11, 13		✓				
	Timber, plywood	11		✓				
	Woven mats	11		✓				
	Thatch	9, 11		✓				Climate sensitive
	Tiles, clay, wooden, stone etc.	9, 11		✓				Climate sensitive

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors			Comment
					WASH cluster	Health cluster	General relief	
Fixings	Bolts, screws, washers	11		✓	✓			
	Hinges, metal plates etc.	11		✓				
	Metal strapping	7		✓				
	Nails, timber joining	7		✓	✓			
	Nails, roofing	7		✓				
	Pegs	11		✓				
	Rope/cord	1, 2, 3, 4, 7, 12		✓				
	Wire	5, 7		✓	✓			
Doors and windows	Frames and panels			✓				
	Locks and bolts			✓				

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors: WASH cluster	Overlap with other sectors: Health cluster	Overlap with other sectors: General relief	Comment
Tools	Axe	1		✓	✓			Beware that they may be used as weapons in some conflicts
	Builders bucket			✓	✓			
	Chisels	1		✓	✓			
	Crowbar			✓	✓			
	Drill	1, 3		✓	✓			
	First aid kit			✓	✓			
	Gloves and boots			✓	✓			
	Hammer	1, 3, 5		✓	✓			
	Hoe	1, 4		✓	✓			
	Machete	1		✓	✓			Beware that they may be used as weapons in some conflicts
	Pick axe	1, 3, 4, 5	✓	✓	✓			
	Plumb line			✓	✓			
	Rake	3		✓	✓			
	Saw, wood	1, 3, 5		✓	✓			
	Saw, metal	1, 3		✓	✓			
	Screwdriver	1, 5		✓	✓			
	Sharpening stone			✓	✓			

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors: WASH cluster	Overlap with other sectors: Health cluster	Overlap with other sectors: General relief	Comment
Tools	Shovel	1, 3, 4, 5	✓	✓	✓			
	Sledgehammer			✓	✓			
	Spade	3, 5	✓	✓	✓			
	Spanner			✓	✓			
	Spirit level							
	Survey, altimeter, clinometer, GPS etc.	1, 3		✓	✓			In conflict situations, use of these items might not be permitted by authorities
	Trowel			✓	✓			
	Tool box/bag	1, 3		✓	✓			
	Wheelbarrow			✓	✓			
Various	Cloth/fabric sheet			✓				
	Sacks/ sandbags, fencing/ suspended ceilings/ wrapping bodies etc.			✓				

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors			Comment
					WASH cluster	Health cluster	General relief	
Lighting	Torch	1, 9		✓				Supply with spare batteries
	Candle and matches	9		✓				
	Oil lamp	5, 9						
	Electric lamp and wiring	1						Requires health and safety for installation May require a generator
Storage	Locks, boxes and trunks							
Water transport & storage	Container, jerry-cans	1, 2, 4, 5, 9	✓		✓		✓	High volume for transport
	Container, collapsible	1, 2, 4, 5, 9	✓		✓		✓	Low volume for transport but less robust and difficult to carry
	Container, buckets with/ without lid and/or tap	1, 2, 3, 5, 6	✓		✓		✓	May also be used for storage of food etc.
Water treatment	Tablets for disinfection	1, 2, 5	✓		✓			Some disinfectants are considered as hazardous for airfreight
	Tablets for flocculation				✓			
	Tablets for disinfection and flocculation	1, 3	✓		✓			Some disinfectants are considered as hazardous for airfreight
	Filter	2, 3			✓			

Function	Description	Further reading/ specs	Often stockpiled	Often purchased locally	Overlap with other sectors			Comment
					WASH cluster	Health cluster	General relief	
Cooking and heating	Kitchen set, pots, plates, cups, cutlery etc.	1, 4, 5, 6, 7, 9	✓	✓				Culture sensitive
	Stove, for cooking, charcoal, wood, kerosene, gas, electricity, etc.	5, 7, 9		✓				Or combined heating and cooking stove Climate and culture sensitive
	Stove, for heating, charcoal, wood	5, 7, 9		✓				Or combined heating and cooking stove Climate and culture sensitive
	Kerosene, gas, electricity			✓				
	Fuel, charcoal, wood, kerosene, gas, electricity etc.	7,9		✓				
Vector control	Long-lasting insecticidal nets, individual	1, 2, 5, 8, 9	✓		✓	✓		Climate sensitive
	Long-lasting insecticidal nets, double	1, 2, 3, 4, 5, 8, 9	✓		✓	✓		WHO recommends long-lasting impregnated nets (LLINs) Climate sensitive
	Window and door screens	1, 5, 8			✓	✓		WHO recommends long-lasting impregnated nets (LLINs)
Hygiene	Soap, toilet	1, 5	✓		✓		✓	
	Soap, laundry	1, 5	✓		✓		✓	
	Soap, multipurpose	3, 4, 6	✓		✓		✓	
	Personal hygiene package, toothbrush, sanitary towels, comb etc.	2, 3, 5	✓	✓	✓		✓	Culture sensitive

Further reading/specifications

Numbering in the tables on the preceding pages corresponds as follows (» see section 8 Bibliography):

1 ICRC/IFRC (2009)
2 MSF (2008)
3 Oxfam (2007)
4 UNHRD (2008)
5 UNDP/IAPSO (2000)
6 UNHCR (2007)
7 see section 5.2
8 WHO (2005)
9 Corsellis and Vitale (2005)
10 MSF-B/Shelter Centre (2006)
11 Mukerji, K. and Stultz, R. (2005)
12 IFRC/Oxfam (2007)
13 Ashmore, J. and Fowler, J. (draft, 2008)

5.4 Packaging and marking

Packaging of NFIs and packages is usually detailed in procurement specifications. Appropriate packaging serves to:

Contain

- help beneficiaries with onward transport as well as helping logistics teams with transport and warehousing;
- compress materials to reduce transportation volume; and
- group goods into appropriate or convenient units for distribution/handling.

Protect

- protect materials from mechanical damage such as bending tent poles, and the loss or theft of components;
- protect materials from moisture and rotting (this is especially important for items such as tents and blankets); and to
- help with safety in handling (» see sections 5.2.6 and 5.2.9).

Identify

- help with handling and identification of materials and for monitoring quality and sources;
- provide technical information of hazardous or potentially life-expired items (e.g. paints) to potential users; and
- items sometimes require certain operating or usage instructions.

How much packaging?

Insufficient packaging can lead to loss or damage of materials. Too much packaging can lead to the transportation of unnecessary materials.

Uses of packaging

Careful selection of packaging materials can be helpful to the recipients. For example, toolkits can be supplied in strong, lockable boxes to provide secure storage, and cook sets can be supplied in reusable plastic boxes.

Size of packages

Generally items should be packed into packages less than 50 kg, ideally less than 25 kg to allow one person to safely lift them. Particular attention should be made to the distribution of package sizes and shapes where elderly or vulnerable people will have to carry them for a significant distance.

Markings

Many organisations have strict requirements on placement of logos and accompanying text on items to allow identification or for visibility reasons. Additional markings on the

items themselves to identify suppliers and fabrication dates can prove useful in subsequent evaluations of materials.

Containers and palettes

Standard shipping containers: standard shipping containers conform to ISO 6346:1995.

Tbl 5.9 ***Standard dry shipping container dimension (single height)***

	Internal dimensions			Door	
	Length	Width	Height	Width	Height
20' container	5.89 m	2.32 m	2.23 m	2.30 m	2.14 m
40' container	12 m	2.32 m	2.34 m	2.30 m	2.23 m

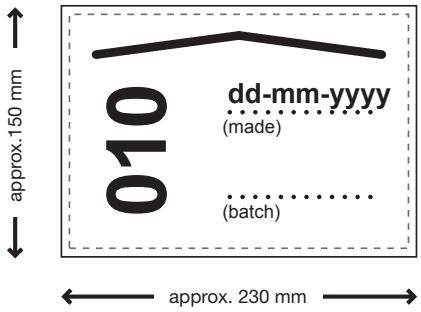
Airfreight containers: A separate standard is used for airfreight containers, (known as unit load devices or ULDs). This is defined by the International Air Transport Association (IATA), ℹ http://www.iata.org.

Pallets: Pallets are most commonly made of wood although they are sometimes made of plastic or other materials. There are many different dimensions of pallets in use; examples of different pallet standards are EuroPallets, Pallets under ISO standard 6780, and the North American Grocery Manufacturers' Association (📖 UNDP/IAPSO, 2000: p 24).

5.4.1 Example NFI marking developed by DFID

The following marking developed by the Department for International Development (DFID) of the British Government has been included in these guidelines as an example. Should other organisations find it useful, they are invited to use it for marking their NFIs and packages. The information contained on the label includes an identifier of organisation ('010' in this example), date of manufacture, and batch number for tracking.

Fig 5.1 ***Example NFI marking developed by DFID***



6 NFI stockpiles

Stockpiling is only one part of a supply chain strategy. Developing a successful strategy requires close cooperation between logistics, programme and technical staff.

Why stockpile?

The principle benefit of stockpiling is that it allows a rapid response to a major emergency. However, there are drawbacks to consider:

- items may not be used for several years, incurring storage costs;
- the risk of items spoiling, becoming obsolete or simply disappearing;
- airfreight costs can easily be of the same order of magnitude as the purchase cost of the items. Investing in rapidly deployable or in-country procurement capacity may be a more cost effective option in some emergencies; and
- stockpiled items rarely match the exact needs on the ground; thus there is an element of wastage when items are sent. This can be a particular problem when it has not been possible to assess needs adequately on the ground. The need to be seen to be doing something can also encourage organisations to push items.

Given the high value of the stockpiles used, evaluations should pay greater attention to their impact.

Non-food items which are commonly stockpiled include: tents, plastic sheeting, blankets, tools, water containers and mosquito nets.

Who holds stockpiles?

A wide range of organisations hold stockpiles. These are commonly accessed as indicated in the following table.

Tbl 6.1 ***Stockpile types by organisation***

Who	Access
Governments of disaster-affected countries	Through their own departments.
Donors	Often given to Governments of disaster-affected countries, UN, International or Non-Governmental Organisations. This may be under formal agreements or on a case-by-case basis.
United Nations Organisations	To host Governments and implementing partners (often NGOs) under formal agreements.
NGOs (both international and national)	Generally prioritise their own organisations and would only consider sharing with other organisations on a case by case basis; informal sharing between NGOs who know and trust each other is common.

There is growing tendency not to put logos on items to allow greater sharing between organisations. However, it is still necessary to clearly label items so that they can be easily identified.

Which items to stockpile?

Criteria include:

- good fit with the needs or the needs of the organisation or the needs of humanitarian sector as a whole;
- commonly used in a wide range of emergencies;
- have significant impact in saving lives and reducing human suffering;
- difficult to procure sufficient quantities rapidly enough if ordered following a disaster;
- difficult or impossible to procure locally;
- high value and/or impact but low volume and/or weight;
- long shelf life;
- standardisation and quality of the items provide particular advantages, for example long lasting impregnated mosquito nets; and
- commercial pressure or offers of contributions in kind.

How to stockpile?

Tbl 6.2 ***Stockpile types***

Physical stockpiles
Held in either the organisation's own warehouse or a third party's warehouse.

Virtual stockpiles
Held either by:

- a supplier on the organisation's behalf in the supplier's warehouse as part of their overall stock; or
- secured by a long term agreement whereby the supplier guarantees to supply items within a given period.

How much to stockpile?

In theory, it should be possible to estimate needs based on a range of scenarios, map existing global stockpiles and by taking one from the other, deduce any gap (or excess) in global capacity. Estimating needs and mapping global capacity however involves significant challenges, inaccuracies and assumptions. This would undermine such an exercise.

In practice, organisations make informed guesses and then adjust stocking levels in the light of their own experience, resources and ambitions.

Where to stockpile?

Stockpiles are maintained at the global, regional and country level by many organisations. Issues considered by organisations in deciding where to stock pile include:

- **Emergency management structure:** if management is highly centralised, then there is probably a small number of large global stocks with few regional or country stockpiles;
- **Internal politics and organisation:** tensions and inefficiencies may lead to the establishment of multiple independent stockpiles; and
- **Analysis of needs, priorities, benefits and costs:** varies by organisation.

Who maps stockpiles?

The Logistics Support Unit (LSU) of UN/OCHA is mandated to maintain an up-to-date global inventory of stockpiles of emergency relief items including NFIs for shelter. The Stockpile Register is available at ℹ http://ocha.unog.ch/cr. A username and password to access the non-public parts of the register may be obtained by contacting LSU at ℹ lsu@un.org.

7 Case studies

These case studies are examples of projects that have included the distribution of shelter packages. They are not examples of good practice, as formal evaluations of their effectiveness have yet to be undertaken. These case studies are included to show what has been done before, and illustrate responses that were made after consideration of local conditions.

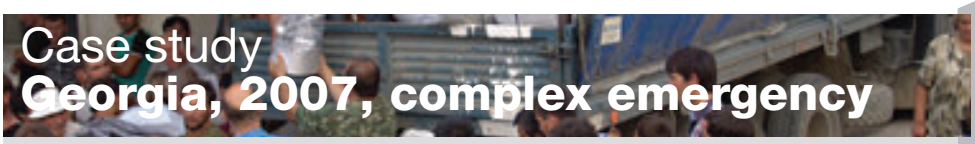
These case studies represent responses that have taken place in the following emergency conditions:

Climates: cold, hot dry and warm humid (» see section 3);

Settlement types: displaced and non-displaced populations (» see section 2.2);

Continents: Africa, Asia and Latin America/Caribbean;

Type of package: repair (or upgrade or salvage), entire shelter, livelihoods support and individual family shelter or communal shelter.



Case study
Georgia, 2007, complex emergency

Disaster

Conflict from 1991 to 2007 in Chechnya and North Ossetia.

Houses damaged by emergency/ No. of households displaced

In total, around 600,000 people, including ethnic Chechens, had been forced out of Chechnya. In addition, some 40,000 people had also fled to other areas of the Russian Federation following inter-ethnic conflict in North Ossetia in 1992.

No. of packages distributed

A total of 2,622 packages distributed between 2002 and 2007 in Ingushetia, Chechnya, and North Ossetia.

Climate/weather

Cold climate (see section 3.1), characterised by a cold winter, with average temperatures below zero, and hot in summer.

Project summary

Given the climatic challenges and the length of displacement, transitional shelters, also known as 'box tents' or prefabricated huts, were designed to be more durable than tents and had a covered area of 22.7 m^2 (5.50 m x 4.125 m) and a sloping roof. The constituent parts of these timber framed 'box tents' were supplied in packages.

The prefabricated walls were a sandwich of wood fiberboard panels with a filling of mineral wool as heat isolation. The exterior panels were prefabricated and painted to protect the wood. The roof consisted of a simple tier of beams covered with corrugated metal roof sheets. The floor consisted of a tier of beams mounted on uprights and covered with planks. The package also contained a wooden house door and one window. A standard set of working tools was supplied as well.

It was anticipated that at a later stage, walling materials including bricks, cement blocks, or timber cut-pieces could be sourced locally. This was known as a second phase durable housing solution.

Strengths and weaknesses

- A quick and relatively cheap temporary housing solution.
- This temporary shelter, without further assistance, could later become an unsatisfactory durable solution.
- Box tents disassembly and reassembly was not possible due to the lack of stiffness of the elements.

Georgia, 2007, box tent package

Item	Quantity	Item	Quantity
Facades, roof carpentering & joinery		**Power supply**	
Timber (50 x 50) for element frames	0.540 m^3	Copper wire 2 x 1.5	22 m
Timber (100 x 25)	0.038 m^3	Wire holders	30
Timber (150 x 25)	0.138 m^3	Switches	1
Nails (2 x 30)	4.5	Sockets	1
Nails (4 x 100)	2.5 kg	Lamp-holders	1
Fibreboard (4.625 m^2)	32	Transfer case	1
Heat insulation (mineral wool)	70 m^2	Safety fuse	1
Oil paint	15 kg	**Fire protection**	
White spirit	1 litre	Heat insulation shield (1.30 x 0.40)	2
Wooden door (case & leaf)	1	Heat insulation shield (1.00 x 0.50)	2
Door hinges	4	Adhesive insulation tape (l = 5.00)	18
Door handles	2	Fire extinguisher OP-6	1
Door latch	1	Claw hammer (750 g)	1
Window (frame & wing)	1	**Tools**	
Roof covering		Wood cutting saw (l = 30 cm)	1
Screws (galvanized)	45	Steel saw (l = 30 cm)	1
Corrugated metal sheets (4.5 m x 1.15 m)	5	Standard polyethylene foil (d = 2 mm) for emergency roof covering (l = 3.00, w = 1.00)	14
Flooring		Paint roller	1
Timber (50 x 100)	0.390 m^3		
Timber (25 x 150)	0.630 m^3		
Bitumen waterproof membrane (size of floor plan)	1		
Nails (3 x 80)	2 kg		

Case study
Kenya, 2007, complex emergency

Disaster

The Kenyan election crisis, which was subsequently compounded by food security problems, flooding in some areas and drought in the north.

Houses damaged by emergency/ No. of households displaced

Between 125,000 and 250,000 IDPs found shelter in camps and similar settlements during the violence. An estimated 300,000 moved in with host families and around 12,000 fled to Uganda.

No. of packages distributed

A total of 481 shelter packages were distributed as part of a pilot project.

Climate/weather

Warm, humid climate (see section 3.2)

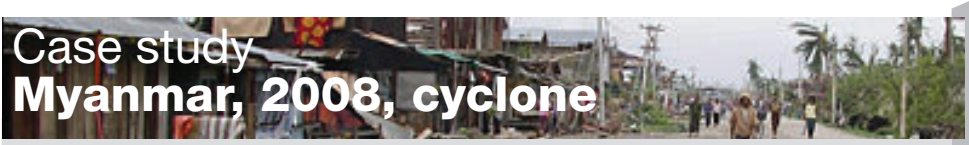
Project summary

A response plan was developed by the Emergency Shelter Cluster to provide NFIs and tents to meet the need for emergency shelter. Concurrently, a transitional shelter design was developed to bridge from the emergency phase until the achievement of durable solutions. An NGO, working with partners, built transitional shelters with a floor plan of 18 m^2. Deliveries of materials were phased so that beneficiaries received tools first.

Strengths and weaknesses

- After the pilot phase, the shelter package was improved to provide wooden planks, locks and hinges to allow the beneficiaries to build one door and two windows.
- The materials were bulky to transport with approximately 30 packages per 20 tonne truck.
- The package was only distributed to people whose houses had been completely destroyed. There were many people whose houses had been partly damaged, as many roofs and doors had been looted, and these people were not supported.
- Although the package included spare sheets and plastic sheeting for the construction of latrines, these were not prioritised by beneficiaries and the materials were often used to extend the roof instead.
- Not all materials were locally available in sufficient quantities. Careful consideration of the sourcing of materials was required before scaling up the project.

Kenya, 2007, transitional shelter package	
Item	**Quantity**
Materials	
Cedar Posts 3 m – 3.6 m long, 75mm – 100 mm diameter	14
CGI ridge covers 30 gauge, 1,80 m (length)	4
CGI sheets 30 gauge, 2.00 m x 0,9 m	20
Cypress timber 50 mm x 50 mm, 3 m	10
Cypress timber 50 mm x 75 mm, 2.1 m	15
Cypress timber 50 mm x 75 mm, 3 m	9
Wooden plank (Door and windows) 25 mm x 15 0mm x 2.2 m	8
Plastic sheeting 1000 gauge	54 m^2
Locks and hinges	
Pad lock (Door)	1
Locking system for door (Included screw)	1
Locking system for windows (Included screw)	1
Hinges for door (Included screw)	2
Hinges for windows (Included screw)	2
Tools and fixings	
Panga (Included handle)	1
Roofing nails	4 kg
Claw hammer	1
Wood cutting saw	1
Measuring tape	7 m
Fixings	
Iron hoop 13 mm	1 kg
Manila thread 2 mm diameter	30 m
Nails 100 mm	4 kg
Nails 75 mm	4 kg
Nails 50 mm	1kg



Case study
Myanmar, 2008, cyclone

Disaster

Cyclone Nargis, high winds and tidal surge.

Houses damaged by emergency/ No. of households displaced

An estimated 2.4 million people were severely affected by Cyclone Nargis, equivalent to more than one third of the population. Nearly 140,000 died or were missing.

Climate/weather

Warm, humid climate (see section 3.2).

Project summary

The emergency shelter strategy focused on the distribution of three NFI packages: a Household Relief Kit, a Household Tarpaulin Kits and a Community Tool Kit.

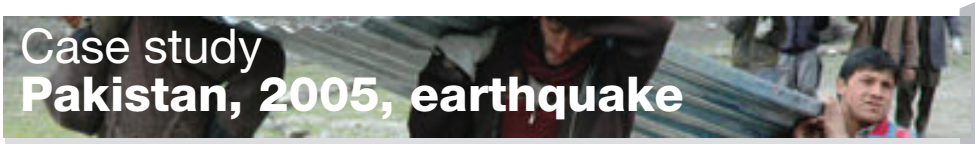
One TWIG was activated to develop a 'Nargis appropriate tool kit' and another to 'develop the Early Recovery strategy.' Initially the IFRC tool kit was selected as the standard family tool kit. An additional community tool kit was also agreed upon.

An NGO noted that the toolkit should be adapted to bamboo which was a major local construction material. Working together with field hubs, an alternative bamboo/timber toolkit was developed. This emergency tool kit was better suited to the affected area, and informed the development of the recovery tool kit.

Strengths and weaknesses

- Mosquito nets were welcomed by communities.
- The tarpaulins helped waterproof shelters until the rainy season was over, and the next harvest of thatching materials was possible.
- It took a long time to gain enough information from the field to make decisions. By the time the package was approved most agencies had already selected NFIs and placed orders for them.
- As most field staff were non-technical and self-help reconstruction was fast, a Technical Construction Guideline document would have been useful.
- There was a need for mass procurement and shipment of raw material to overcome the local resource shortage.
- Where organisations distributed one sheet of tarpaulin to gain maximum coverage, the need for an additional top-up distribution was not assessed.

Myanmar, 2008, packages	
A. Household Relief Kit – 1 per Household	
Item	**Quantity**
Blankets	2 pcs
Mosquito nets, double size, impregnated	2 pcs
Cooking set	1 set
Jerry can, 10 litre foldable	1 pcs
B. Household Tarpaulin Kit –1 per Household	
Tarpaulins 6 m x 4 m	2 pcs
Rope, 12 mm nylon	30 m
C. Community Toolkit – one for every 5 Households Guidance Note; Timber/masonry community tool kit and Bamboo construction community kit to be distributed according corresponding building type. (see table below for detail item list)	
Bamboo construction	
Large machete, wooden handle blade sharpened for use	5 pcs
Handsaw total length 750 mm for wood, good quality	1 pcs
Claw hammer forged steel, with wooden handle length 400 mm	3 pcs
Nails 4 inch (100 x 3 mm) in sealed bag	2.5 kg
Nails 3 inch (75 x 3 mm) in sealed bag	1.5 kg
Nails 2.5 inch (25 x 2 mm) in sealed bag	1 kg
Length of 5-7 mm natural fibre rope or bamboo strips	200 m
Crowbar	1
4 piece chisel set	2
Sharpening stone	1
Woven sack	1
Timber and masonry construction	
Rope 5-14 mm	30 m
Handsaw total length 750 mm for wood, good quality	1
Roofing nails, Capped with attached rubber washers	0.5 kg
Shovel. Head is hot forged steel. Wooden handle	1
Hoe. Head is 230 x 175 mm in forged steel. Wooden handle	1
Machete, wooden handle blade sharpened for use	1
Tin snips for cutting roofing sheets, good quality	1
Nails 3 inch (75 x 3 mm) in sealed bag	0.5 kg
Wire	5 m
Claw hammer forged steel, 0.75 kg	1



Case study
Pakistan, 2005, earthquake

Disaster

Earthquake affecting North Western Frontier Province and Kashmir.

Houses damaged by emergency/ No. of households displaced

73,000 deaths, 3,000,000 homeless, 600,000 damaged or destroyed houses.

No. of packages distributed

17,000 Household Kits, 16,200 Shelter Repair Kits and 20,000 CGI Kits.

Climate/weather

Cold climate with heavy snowfall (see section 3.1) and a warm summer.

Project summary

An NGO carried out a two-phase distribution programme:

Phase 1 was a distribution of 17,000 Household Kits and 16,200 Shelter Repair Kits. **Phase 2** was a follow-up distribution of Corrugated Galvanised Iron Sheet (CGI) Kits - 171,034 CGI sheets were distributed to 20,000 families to construct 'one-room response' temporary shelters. This phase was complete 12 months after the earthquake.

Strengths and weaknesses

- A model shelter was built in the field to agree on the quantities of materials required and to demonstrate appropriate construction techniques.
- The Shelter Repair Kit was distributed first, so that recipients had to build their timber frame house before the CGI was distributed. Field staff provided guidelines on structural safety for building of the timber frame.

Pakistan, 2005, phase 1

Item	Quantity	Item	Quantity
Shelter Repair Kits		**Household Kits**	
Hoe	1	Rope	10 m
Pick axe	1	Lantern and matches	1
Hand Tiller	1	Comb	1
Hammer	2	Toothbrush adult	4
Plow	1	Toothbrush child	2
Shovel	1	Toothpaste	2
Land Leveller	1	Soap	3
Spanner	1	Detergent	5

Item	Quantity	Item	Quantity
Shelter Repair Kits		**Household Kits**	
Handsaw	2	Towel	5
Axe	1	Sanitary cloth	5 m
Spare Wooden Handles	3	Water pitcher (toilet)	1
Rope	50 m	Gas stove	1
Steel Wire (Binding Wire)	1 kg	Knife	1
Nail 5”	5 kg	pot with cover	1
Nail 3”	3 kg	frying pan	
Nail 2”	3 kg	cooking spoon	1
Nail 1”	3 kg	Plastic glass and plate	5
Steel Nail 2”	2 kg	Plastic container	1
Steel Nail 3”	2 kg	Spoon	5
Plastic Sheets (USAID 4 m x 10 m)	1	Jerry can	1
Quilts	5	Water scooper	1
		Bucket (small)	1
		Bucket (large)	1
		Plastic Shoes Adult	1
		Plastic Shoes Child	3
		Socks Adult	3
		Socks child	3
		Wool Caps	3
		Underwear set Adult	3
		Underwear set Child	3
		Shawl for women	3
		Shawl for men	3

Pakistan, 2005, phase 2

Item	Quantity
CGI Kits	
CGI - 26 gauge, 10 ft x 3.5 ft Each	14
Nail	2 kg
Washer	1 kg
Rubber Washer	350 g
GI Sheets (Plain Sheets 28 or 29 gauge) - 2 ft x 8 ft	3

Case study
Pakistan, 2007, flood and cyclone

Disaster

Floods affecting Balochistan and Sindh Provinces, Southern Pakistan.

Houses damaged by emergency/ No. of households displaced

2.5 million affected, 371,092 homeless, 114 relief camps set up.

Climate/weather

In Balochistan, **hot, dry** (see section 3.3); in Sindh, **warm, humid** (see section 3.2).

Project summary

The shelter packages were developed in consultation with affected people and discussed at Emergency Shelter Cluster meetings. The intention was that the packages would respond to reconstruction needs and used material bundles that were familiar and reusable.

Assessments showed that typical pre-existing houses were about 3.7 m x 4.6 m. Providing bamboo poles shorter than this would be no use for reconstruction of the traditional roofing. These single-room family units were often clustered in a compound of extended family. This was surrounded by a perimeter wall where reconstruction had begun. These walls were repaired as a priority. Plastic sheeting was included in packages with the idea that people could adapt it as a wind proof layer, privacy barrier in dry areas and a rain-proof roofing material in wet areas.

The transitional shelter documents that were developed by the cluster were based on the ARC transitional shelter ℹ http://www.arcpakistan.org/html/cyclone.

Strengths and weaknesses

- In developing packages, attention was paid to traditional construction methods and materials. These materials included mud, mud brick and fired brick walls and roofing was often a heavy composite of beams, overlaid with woven matting. There were both rigid and soft varieties of woven matting ('kera' and 'chattai') manufactured locally.
- The response was under-funded and varied between areas, depending upon access and how quickly the flood waters receded. The most effective responses took place where NGOs were able to run participatory assessments.
- After two months only 4% of the shelters distributed were packages, and the majority of the shelter response implemented was in the form of tent distribution. It was expected that the proportion of packages would rise to over 60% as more and more programmes delivering packages were implemented.

Pakistan, 2007, shelter packages

Material specification for Emergency Shelter Kits	
Item	**Quantity**
Plastic sheets 6 m x 4 m (standard specification) - Roofing, walls, partitions	3
Tight-woven rigid kera chitai mats. 6m x 4m. Natural or synthetic ('chitai' or 'chikk') - Flooring, walls, privacy screens	1
Bamboo or wooden poles, 7 m x 75 mm diameter - Structure and reuse	16
Rope, Natural or synthetic, Diameter: min. 5 mm - Binding bamboo, guy lines, bracing	20 m
String/twine, Natural or synthetic (e.g. polypropylene) - Tie-down straps, attaching screens, miscellaneous	250 g
Bush saw, hack-saw, or equivalent - Cutting bamboo	1

Case study
Peru, 2007, earthquake

Disaster

Earthquake affecting Pisco, Ica and Chincha Provinces.

Houses damaged by emergency/ No. of households displaced

434,616 affected, 519 deaths, 48,208 houses destroyed, 45,500 houses damaged.

Climate/weather

Hot, dry (see section 3.3) with high variation in temperature, low rainfall and occasional strong winds.

Project summary

The shelter programme was run in two phases:

Phase 1: Emergency distribution and initial support (1 to 3 months after onset):

- kitchen packages, hygiene packages and four blankets to 8,000 families;
- family tents to 300 families; and
- plastic tarpaulins to 4,500 families.

Phase 2: Transitional shelters (2 to 6 months after onset), distribution of Shelter Packages (» see next page) with four blankets and 1 kitchen package.

The transitional shelter phase was only possible after a proper assessment to gain reliable data to plan the intervention. Shelter was identified as a priority in the consultation.

The shelters were constructed by local masons and beneficiaries with technical supervision. Volunteers for the organisation facilitated the entire process.

Local authorities were involved in the project because they were aware of the land property issues of many families, without legal papers, in this area. It was agreed that the families could stay on the same land for one year. This project solved the immediate and medium term shelter needs while the government considered how to implement the reconstruction programme.

Strengths and weaknesses

- Design and materials for the Shelter Package were agreed with the local population, using local materials. The design was adapted to the climatic conditions, specific to rural areas and acknowledged Sphere standards.
- A 'self construction manual' was distributed in order to teach the beneficiaries how to build better, and provided simple guidance on shelter construction.
- After the earthquake there was a sudden rise in demand for local materials causing a rise in prices

Peru, 2007, shelter package	
Materials (per family)	**Quantity**
Cement (Portland)	90 kg
Eucalyptus pole (2 m x 3”)	7 poles
Eucalyptus pole (2 m x 2”)	3 poles
Eucalyptus pole (3 m x 2”)	9 poles
Eucalyptus pole (6 m x 2”)	8 poles
Woven leaves mats ‘esteras’ (2 m x 3 m)	9
Nails, n° 3”	3 kg
Nails, n° 2.5”	2 kg
Nails, n° 1.5”	1 kg
Hinge (2.5”, of steel)	3
Knocker (2”, of steel)	1
Padlock ‘candado’	1
Tie wire galvanized (n° 16)	5 kg
Plastic sheeting (4 m x 6 m)	2½
Common sand. Provide by beneficiary families	1 m^3
Staple (max. 1”, steel)	2000
Tools (Per group of workers - 1 mason, 1 volunteer and 2 beneficiaries)	
Hammer	2
Hand saw (Approximately 40 cm)	1
Level pipe (transparent of plastic, 7 m)	1
Shovel	2
Industrial stapler (max. 1”)	2
Pliers	1
Wheel barrow	1
Mask	100
Pair of gloves (for construction)	3
Security lenses	3
Construction helmets	3
Tape measure (5 m)	1
Rope (12 mm, polyester)	15 m
Scissors (to cut the woven leaves mats)	1

Case study
Indonesia, 2006, earthquake

Disaster

Earthquake affecting the area surrounding Yogyakarta in central Java.

Houses damaged by emergency/ No. of households displaced

5,778 deaths,1.4 million people homeless, 300,000 - 350,000 houses damaged or destroyed.

Climate/weather

Warm, humid (see section 3.2) with heavy rainfall throughout the year.

Project summary

An NGO ran a four phase response, which included:

Phase 1: one tarpaulin each was distributed to 73,380 families;

Phase 2: it was established that tarpaulin was being used for both roofs and walls together with framing material available locally. The priority for Phase 2 was determined to be wall cladding and tools to extend usable space within the shelter. 26,400 families were supported with:

- Package 1 - Cleanup toolkits (2,818 distributed)
- Package 2 and Package 3 - Early recovery toolkits and fastening material packages (2,650 distributed)
- Package 4 - Village recovery trade tool kits (530 distributed)
- Floor mats to approximately 26,500 families (two mats each family)
- Wall materials (six bamboo mats) or 2 tarpaulins to approximately 22,600 families

Phase 3: small grants were made to local organisations, businesses and communities, to build 2,265 transitional shelters

Phase 4: working with the cluster and local civil society to ensure an equitable response; working with local universities to develop technically and culturally appropriate construction methods; and a public outreach programme to facilitate safe cleanup, temporary shelter construction and disaster risk reduction.

Seven local partner NGOs and the Emergency Shelter Cluster were involved in designing the shelter packages and programme. Initial distributions of tarpaulin were sourced from in country stockpiles, later ones were imported. Bamboo walling sheets of 3 m x 2 m

were distributed, which could be rendered with cement for more privacy, or left open for ventilation.

Strengths and weaknesses

- To create livelihood opportunities and contribute to the shelter response, members of the affected communities were trained in the production and distribution of bamboo walling sheets.
- Flyers were produced which included information on the selection criteria, the contents of the package, the cost of the package, the expected delivery date and the contact details of the implementing NGOs. These were jointly signed by community leaders and the NGOs, then distributed and displayed publicly in the community.

Indonesia, 2006, packages

Phase 1 - roofing			
Tarpaulin (4 m x 6 m) –1 tarpaulin/family			
Phase 2 - wall and floor			
Option 1		**Option 2**	
Tarpaulin (4 m x 6 m) – 2 per family		Bamboo mat – 6 sheets (3 m X 2 m) or 8 sheets 2 x 2 m (two sizes due to variations in local supply)	
Phase 2 - Toolkits - (follow up, targeted distribution)			
Toolkit 1 (clean up kits)	**Toolkit 2 (recovery kits)**	**Toolkit 3 (1 kit per 10 Household)**	**Toolkits 4 (1 kit per 50 Households)**
Crowbar	Crowbar	Rope	Pulley and hook
Claw hammer	Chisel	Nails	Chisel set
Sledge hammer	Pickaxe	Fencing wire	Sharpening stone
Shovel	Shovel		Rope
Saw	Tape measure		Drill and drill bits
Broom	Trowel		Hand plane
Wheelbarrow	Hack-saw, blades		
Hoe	Pliers		
Machete	Builders line		
Cement bucket	Spirit level		
Flat bar			
Dust masks and work gloves			

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8.1 Relief items catalogues

ICRC/IFRC (2009). Emergency items catalogue, ICRC/IFRC, Geneva ℹ http://www.icrc.org/emergency-items/

IFRC (2009). The IFRC Shelter Kit, IFRC, Geneva ℹ www.humanitarianreform.org

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UNHRD (2008). UNHRD Catalogue, United Nations Humanitarian Response Depot ℹ www.unhrd.org

8.2 Other online resources

Camp Coordination and Camp Management Cluster
http://www.humanitarianreform.org/CCCM

Central Emergency Respond Fund (CERF)
http://ochaonline.un.org/cerf/

Cluster Working Group on Early Recovery
http://www.humanitarianreform.org/earlyrecovery

Emergency Shelter Cluster
http://www.humanitarianreform.org/shelter

Health Cluster
http://www.humanitarianreform.org/health

Humanitarian Information Centres
www.humanitarianinfo.org

Internal Displacement Monitoring Centre (IDMC)
www.internal-displacement.org

Logistics Cluster
http://www.humanitarianreform.org/logistics

ReliefWeb
www.reliefweb.int

Shelter Centre
www.sheltercentre.org

The Sphere Project
www.sphereproject.org

United Nations High Commissioner for Refugees (UNHCR)
www.unhcr.org

United Nations Office for the Coordination of Humanitarian Affairs (UN/OCHA)
http://ochaonline.un.org

Water, Sanitation and Hygiene Cluster
http://www.humanitarianreform.org/WASH

8.3 Conversion factors

Tbl 8.1 Length conversion factors

Imperial		Metric
1 inch [in]		2.54 cm
1 foot [ft]	12 in	0.3048 m
1 yard [yd]	3 ft	0.9144 m
1 rod , pole or perch	5.5 yards	5.0292 m
1 mile	1760 yd	1.6093 km

Tbl 8.2 Area conversion factors

Imperial		Metric
1 sq inch [in^2]		6.4516 cm^2
1 sq foot [ft^2]	144 in^2	0.0929 m^2
1 sq yard [yd^2]	9 ft^2	0.8361 m^2
1 acre	4840 yd^2	4046.9 m^2
1 sq mile [$mile^2$]	640 acres	2.59 km^2

Tbl 8.3 Volume conversion factors

Imperial		Metric
1 cu inch [in^3]		16.387 cm^3
1 cu foot [ft^3]	1,728 in^3	0.0283 m^3
1 fluid ounce [fl oz]		28.413 ml
1 pint [pt]	20 fl oz	0.5683 l
1 gallon [gal]	8 pt	4.5461 l
USA measure		
1 fluid ounce	1.0408 UK fl oz	29.574 ml
1 pint (16 fl oz)	0.8327 UK pt	0.4731 l
1 gallon	0.8327 UK gal	3.7854 l

Tbl 8.4 Mass conversion factors

Imperial		Metric
1 ounce [oz]		28.35 g
1 pound [lb]	16 oz	0.4536 kg
1 stone [st]	14 lb	6.3503 kg
1 hundredweight [cwt]	112 lb	50.802 kg
1 ton (UK) [t]	20 cwt	1.016 mt

8.4 Extract from proposed Responsibilities and Accountabilities Matrix for the ES & WASH clusters

Tbl 8.5 ***Extract from proposed Responsibilities and Accountabilities Matrix for ES and WASH clusters***

Area of potential overlap	Specific activity	Responsibilities	
		Emergency Shelter	WASH Cluster
For all phases: Preparedness, Rapid onset and Ongoing Emergencies			
General Household Support Package[1] (NFIs)	Define overall package	Coordinated by ES Define non-WASH related items	Define WASH related items
	Define specifications	Coordinated by ES Specify non-WASH related items	Specify WASH related items
	Distribution, tracking and monitoring	Coordinated by ES Share information with other clusters	Encourage WASH agencies to coordinate with ES
Household (HH) WASH support Package[2] (NFIs)	Define overall package, specifications, distribution, tracking and monitoring	Encourage ES agencies to coordinate with WASH	Responsible Share information with inter-cluster mechanism
	Coordinate and define the common approach to promotion and use	Encourage ES agencies to coordinate with WASH	Responsible Cooperate with ES on HH Support Package tracking Share information with inter-cluster mechanism
Household Shelter Construction Support Package[3] (NFIs)	Define overall package, specifications, distribution, tracking and monitoring	Responsible Share information with inter-cluster mechanism	Encourage WASH agencies to coordinate with ES
	Coordinate and define the common approach	Responsible Cooperate with WASH on HH Support Package tracking Share information with inter-cluster mechanism	Encourage WASH agencies to coordinate with ES
Preparedness for all Support Package items (where stocks are held at country level)	Determine which items are 'WASH related'	Appraise proposed items and reach agreement with WASH	Propose WASH related items and reach agreement with ES
	Emergency stockpiles; agree quantities to stock, stockpiling locations, fund raising, purchase, release criteria, replenishment, monitoring of stocks	For ES NFIs (Non WASH)	For WASH related NFIs

www.humanitarianreform.org/WASH

1 General Household Support Package is usually defined as items that can be distributed without additional instruction/promotion/education – e.g. cooking sets, blankets, jerry-cans, buckets, soap, etc. Where the specification of General NFIs is linked to an item from the WASH package, these should be agreed with or distributed by WASH actors – e.g. water containers should be of a volume corresponding with the quantity of water treated by the disinfection chemical. This will also impact on the instructions given.

2 Household WASH Support Package is usually defined as items that need additional instruction/promotion/education – e.g. household water treatment, mosquito nets.

3 Household Shelter Construction Support Package is defined as items that need additional instruction/promotion/education – e.g. tool kits, construction materials.

8.5 Example shelter packages from DFID and IFRC

In agreeing shelter packages appropriate to a given response, it may be helpful to refer to example standardised shelter packages used by donors and agencies.

Example A – DFID Shelter Kit

The first example standardised shelter package is used by DFID, which has also developed standardised marking for packages and items (» see section 5.4.1).

Part 1 of the kit provides materials for a covering. It is designed so that it can be split in half, so that twice the number of beneficiaries can receive support. In this case, each half of the kit is sufficient to provide a modest level of shelter protection.

Part 2 of the kit provides materials for a structure, in addition to the covering, where materials are not available locally.

Parts 1 and 2 of the kit are selected and dispatched from the DFID warehouse in agreement with its implementing partner and/or the ESC.

Tbl 8.6 ***DFID Shelter Kit, Parts 1 and 2***

Part 1 Specification	Quantity
Tarpaulins, woven plastic, Width 4m Length of 7m. Weight 170g/m^2 +/- 5%, plus 10% for the reinforcement bands under ISO 3801. Welded plastic eyelets, with inner diameter 10mm and outer diameter 30mm, at 1m spacing.	2
Rope, polypropylene, diameter: 6mm, 40m, in roll, colour: Black	1
Rope tensioners, 6mm	8
Knife, wooden handle, folding, stainless steel blade sharpened for intended use	1
Part 2 Specification	Quantity
Poles, Diam.: 48mm OD galvanized steel, min. wall thickness 1.5mm, Length 2m, in two sections	2
Pegs, T-shaped, OD galvanized steel, Length of 500mm	4
Part 1 packing and shipping specification	
1 kit approximate weight (kg): 10, 2 kits packed per carton Carton dimensions (mm): 570 x 470 x 210 Volume per carton (m^3): 0.056, Weight per carton (kg): 20 Payload per 40' DC Container: 2000 kits (approx.)	

Example B – IFRC Shelter Kit

The second example shelter package is from the IFRC. This kit is especially made for distribution after a disaster affecting sheltering capacities of the population. It is designed to be distributed one kit per family. Two plastic tarpaulins are supplied with the kit, packed separately. Other roofing material and structure material are not included, and could be ordered separately.

Tbl 8.7 ***Summary of IFRC Shelter Kit***

Specifications	Quantity
Tarpaulins, woven plastic, 4x6m. As per IFRC/ICRC specification Packed separately from Tools below. (*HSHETARPW406*)	2
Rope, polypropylene, diam.: 12mm, 30m roll, black, twisted (*HSHEROPE12PB*)	1
Hand saw, total length 550mm +/- 50mm. Laminated carbon steel hardened and tempered. Wooden handle. Protective cardboard, and teeth protection with plastic hard cover (*ETOOSAWSW400*)	1
Roofing nails, Spiral rolled shank or twisted shank, with watertight rubber washer. Shank dimension 75x3.6mm (3"), head diameter 22mm. Packed in strong plastic bag. (*EHDWNAILRS01*)	0.5 kg
Shovel, head only is pressed carbon steel, hardened and tempered. HRC 35 min - 48 max. Black paint. Supply with Y handle of length 1070mm +/- 50mm. (*RAGRTOOLSHO2*)	1
Hoe, full piece dimension 180x240mm. 1.250kg +/- 150g, without handle. Supply with varnished hard wood handle length approx. 1100-1200mm. (*RAGRTOOLHOE3*)	1
Machete, Curved blade , 405mm/16", lacquered against oxidation. Overall length 55cm. Wooden handle. Blade packed in carton pocket for protection. (*RAGRTOOLMAC1*)	1
Shears, Tin snips for cutting tin roofing sheets. Straight, semi-hard 0.8mm max., overall length 260mm +/-2mm. Hot forged carbon steel, hardened and tempered. (*ETOOCUTTSHE1*)	1
Nails, large Polished low carbon steel, cold processed. Length x diameter: 75x3.6mm, head diameter: 7.7mm. Packed in strong plastic bag. (*EHDWNAILW080*)	0.5 kg
Nails, small As above except length x diameter: 40x2.2mm, head diameter: 5.5mm. (*EHDWNAILW040*)	0.5 kg
Tie wire, Diameter 1.5mm. 25m long in roll (*EHDWWIRETR15*)	1
Claw hammer, One side flat, one side claw. Head weight: 750g +/- 1%. High carbon steel head, martensitic structure. (*ETOOHAMMCARW*)	1
Polypropylene bag, New woven polypropylene 80g/m² min. 1300x400mm +/- 10mm. Colour: white. Includes kit contents list.	1
Carton box, includes 2 kits. Double wall corrugated carton.	
Packing and shipping specification	
1 kit approximate weight (kg): 12, 2 kits packed per carton Carton dimensions (mm): 1150 x 260 x 190 Volume per carton (m³): 0.072, Weight per carton (kg): 24 Payload per 40' DC Container: 1750 Kits	
Note: This kit does not provide any materials to build structure. It should be assessed if these materials, such as timber or bamboo, can be salvaged by the affectees or if they will need to receive them additionally. As an example, the materials per kit could be: 4 wooden beams 4m long and section of 75x75mm and 4 wooden planks 4m long and section 15x2.5mm	

ICRC/IFRC (2009)

The five non-food item standards published by The Sphere Project

"Clothing, blankets and bedding materials meet the most personal human needs for shelter from the climate and the maintenance of health, privacy and dignity. Basic goods and supplies are required to enable families to meet personal hygiene needs, prepare and eat food, provide thermal comfort and build, maintain or repair shelters."

"Non-food items standard 1: clothing and bedding
The people affected by the disaster have sufficient clothing, blankets and bedding to ensure their dignity, safety and well-being."

"Non-food items standard 2: personal hygiene
Each disaster-affected household has access to sufficient soap and other items to ensure personal hygiene, health, dignity and well-being."

"Non-food items standard 3: cooking and eating utensils
Each disaster-affected household has access to cooking and eating utensils."

"Non-food items standard 4: stoves, fuel and lighting
Each disaster-affected household has access to communal cooking facilities or a stove and an accessible supply of fuel for cooking needs and to provide thermal comfort. Each household also has access to appropriate means of providing sustainable artificial lighting to ensure personal security."

"Non-food items standard 5: tools and equipment
Each disaster-affected household responsible for construction or maintenance and safe use of their shelter has access to the necessary tools and equipment."

'Humanitarian Charter and Minimum Standards in Disaster Response'
The Sphere Project, 2004: p 230-36 (select excerpts)

CD resource

IASC Inter-Agency Standing Committee
Emergency Shelter Cluster

Selecting NFIs for Shelter

Release 1

This CD resource contains:

- commonly referenced specification catalogues
- complementary guidelines and resources

The specification catalogues are included for reference only and neither the organisations to which they belong nor the ESC offer any guarantee that any items contained within them will be appropriate for specific responses.

The specification of NFIs should always be conducted in conjunction with the logistics department within the agency.

shelter centre

UNHCR The UN Refugee Agency

care

NORWEGIAN REFUGEE COUNCIL

IASC Inter-Agency Standing Committee
Emergency Shelter Cluster

Selecting NFIs for Shelter

The guidance in this booklet is offered to assist shelter, coordination, procurement and logistics personnel from humanitarian agencies and governments responding to the needs of populations affected by conflicts and natural disasters, from contingency planning through emergency response until durable solutions have been achieved.

These guidelines may be downloaded from:

www.humanitarianreform.org
www.sheltercentre.org

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