















| PHASE | EMERGENCY | EMERGENCY | TEMPORARY | TEMPORARY |
|--|--|---|---|---|
| SHELTER SOLUTIONS | SHELTER KITS | LIGHT WEIGHT TENTS (UNHCR) | HEAVY DUTY TENTS | TRANSITIONAL SHELTER WITH PLASTIC SHEETING |
| PICTURE |  |  |  |  |
| COUNTRY | ALL | ALL | ALL | BURKINA FASO IFRC |
| 2011 NRC DONOR | 250 shelter kits ECHO | NRC MOGADISHU | 2800 fire resistant tents ECHO/UNHCR/SIDA | IFRC PROTOTYPE BURKINA FASO NONE |
| DESCRIPTION | The shelter kit contains local materials (sticks), rope, plastic sheeting and other utensils (depending on the region). Materials are distributed with minimal training to strengthen their shelter or build an emergency shelter. | | The tents are bought internationally. Distribution is done in cooperation with the beneficiaries and the IDP committee. The structure is strengthened with the materials of the former shelter and covered with the canvas. | All materials are bought locally, except for the plastic sheeting and shelter kits (depending on local market quality). The wooden frame is built economically in order to recuperate afterwards for more durable solutions. Trainings are given to the beneficiaries/builders to support self-built (owner driven) construction. |
| SIZE | 3*4m=12m ² (depending on former shelter) | | 4*4m=16m ² | 2.7*5.4=14.6m ² |
| COST | 30-80 USDOLLARS, depending on amount of materials in the kit. | | 450 USDOLLARS, inclusive transport to Bossaso. | 320 USDollars, inclusive 2 doors in CGI sheeting. |
| TIME-CONSTRAINT | Quality plastic sheeting needs to be imported. If NO regional or local stocks are available, time for implementation can take from 7days-2months | | Procurement and delivery of tents takes a long time. If NO regional or local stocks are available, time for implementation can take from 2-6 months, depending on availability and security. | If owner-driven, construction can be done in 1-8 weeks for 200HH if methodology is in place. |
| CONSTRUCTION | Construction is very simple and totally owner driven. | | Construction is very simple. Structure of tent is always reinforced with local materials (cardboard, hessian sacks, cloth,...) | Timber frame structure, strengthened with X-trusses made of twisted tie-wire. Covered with plastic sheeting. Two (iron sheets as doors). |
| MARKET ANALYSIS | Local materials available and minimum quantity. | | Not locally available, needs to be imported from Kenya, Pakistan,... | The materials necessary are locally available except plastic sheeting, but if they can supply for big numbers is uncertain (especially timber). |
| COMMUNITY PARTICIPATION | Construction can be done with IDP community with small training package. | | Construction can be done with IDP community with small training package. | Community very involved in design process. Construction can be done with IDP community with small training package. |
| FLEXIBILITY AND ADAPTABILITY | Very flexible, emergency solution (light and adaptable) | | Tent structures are less flexible, not upgradable | Structure has been designed to be very flexible and is very adaptable and upgradable. Materials are cut economically and can be re-used for permanent construction (timber). |
| DURABILITY/ SUSTAINABILITY | Not durable, emergency solution. | | Tents can last up to 18 months . Non-durable program, not upgradable. It is not a sustainable solution, but is a preferred emergency solution. | This option is more durable than tents but after 18-24 months the plastic sheeting needs to be replaced (extra 60 dollars/2years). |
| PROTECTION ISSUES | Provides protection from sun, but no physical protection. | | Tents are usually non-locable , but IDP's adjust them with permanent doors. Nevertheless, the canvas is easily penetrable which provides less security during the night. Not fire resistant as the tent is reinforced with all available local materials. | This option offers locable doors, but the plastic sheeting is easily penetrable which provides less security during the night. Not fire-resistant as the shelter is reinforced with all available local materials (hessian sacks, cardboard,...) |
| IMPLEMENTATION/ CAPACITY OF ORGANISATION | Most organisations dealing with shelter-kits have a long experience and easy to implement. | | Most organisations dealing with tents-shelter have a long experience in shelter. | Most organisations in Bossaso have no experience with owner driven approach. With proper small training package (good methodology), an owner driven approach is feasible . |
| ACCEPTANCE | Very accepted and appreciated with NFI emergency kit. | | Tents have been the solution for more than decades. As land tenure is very difficult, tents are widely accepted and offer a good solution. | Looking at problems related to land-tenure and ownership, this solution offers a flexible approach (non permanent, but moveable). Plastic sheeting has a bad reputation. Needs to further identified with community and GVT |
| QUALITY | Quantity is preferred than quality in emergency solutions. It has to be quick and efficient. | | With procurement, samples for quality are given, but the quality of the final shipment often differs from the sampled one. | Proper quality control is necessary with delivery of materials. If beneficiaries are properly trained, quality can be assured (experiences in Peru and Burkina Faso). |
| LIVEABILITY and DESIRABILITY | This is an emergency solution and provides shelter towards rain and sun. Less attention is given to liveability and desirability. | | Tents are not very suitable for hot humid climates. Natural ventilation gets blocked through the combination with local materials. The square design is culturally in-appropriate as it is difficult to divide the tent into two liveable spaces. | Plastic sheeting is not very suitable for hot humid climates. Connection between roof and walls should be kept open to ensure ventilation. Positioning is also important. Design is more culturally appropriate as community is involved in the process. |
| TEMPATURE (after field-analysis) | Same temperature as outside, but provides shading. | | If no ventilation is put in, this can very hot. | If no ventilation is put in, this can very hot. |
| BENEFICIARY INPUT | After consultation with the beneficiaries, a package is assembled and distributed together with emergency NFIs | | Different models have been assessed. The NRC fire resistant tent came out best as the height on the sides is 1.8m and people can stand | The sample model (pilot model) is designed together with the local population. |

| PHASE | TEMPORARY | TEMPORARY | TEMPORARY | SEMI-PERMANENT |
|--|--|---|---|---|
| SHELTER SOLUTIONS | TRANSITIONAL SHELTER WITH PLASTIC SHEETING AND LOCAL MATERIALS | TRANSITIONAL SHELTER WITH PLASTIC SHEETING, LOCAL MATERIALS and CGI sheeting | TRANSITIONAL SHELTER WITH PLASTIC SHEETING, LOCAL MATERIALS and CGI sheeting | CGI SEMI-PERMANENT PORTABLE CONSTRUCTION |
| PICTURE |  |  |  |  |
| COUNTRY | PERU IFRC | MOGADISHU SOMALIA | GALKAYO SOMALIA | SOMALIA |
| 2011 NRC DONOR | IFRC PROTOTYPE PERU | I | 300 HYBRIDS | ± 1100 CGI shelters' |
| DESCRIPTION | All materials are bought locally, except for the plastic sheeting and shelter kits (depending on local market quality). The wooden frame is built economically in order to recuperate afterwards for more durable solutions. Trainings are given to the beneficiaries/builders to support self-built (owner driven) construction. The local mats provide better heat-resistance. | | All materials are bought locally, except for the plastic sheeting (depending on local market quality). The wooden frame is built economically in order to recuperate afterwards for more durable solutions. Trainings are given to the beneficiaries/builders to support self-built (owner driven) construction. The local mats provide better heat-resistance. | All materials are bought locally, except for the plastic sheeting (depending on local market quality). The materials can be reused for durable solutions. Trainings are given to the beneficiaries/builders to support self-built (owner driven) construction. The local mats provide better heat-resistance. |
| SIZE | 2.7*5.4=14.6m² | | 3,6*3,6=13m² | SQUARE 3.7*4.1=15.2m² |
| COST | 400 Usdollars, inclusive local mats | | 410 Usdollars, inclusive 13 CGI sheeting for protection and labour. | portable CGI shelter (prefabricated): 700\$- 840\$, inclusive foundation, panels and erection). |
| TIME-CONSTRAINT | If owner-driven, construction can be done in 1-8 weeks for 200HH if methodology is in place.. | | If owner-driven, construction can be done in 1-8 weeks for 200HH if methodology is in place.. | More complicated construction. 1-3 months for 200HH if methodology is in place.. |
| CONSTRUCTION | Timber frame structure, strengthened with X-trusses made of twisted tie-wire. Covered with plastic sheeting. Two (iron sheets as doors). Same as 2, but with locally fabricated fibre mats. | | Timber frame structure, strengthened with X-trusses made of twisted tie-wire. Covered with plastic sheeting. Two (iron sheets as doors). Same as 2, but with CGI-sheeting on the inside to strengthen structure and provide security. | Timber frame structure, covered with CGI sheeting. Doors and windows in plywood. Flooring elevated with stabilised earth (2 bags of concrete). |
| MARKET ANALYSIS | The materials necessary are locally available, but if they can supply for big numbers is uncertain (especially timber and local fabricated mats). | | The materials necessary are locally available, but if they can supply for big numbers is uncertain (especially CGI sheets, timber and local fabricated mats). | The materials necessary are locally available, but if they can supply for big numbers is uncertain (especially CGI sheets, timber). |
| COMMUNITY PARTICIPATION | Community very involved in design process. Construction can be done with IDP community with small training package. | | Community very involved in design process. Construction can be done with IDP community with small training package. | Community involved in design process. Construction can be done with IDP community with bigger training package, but will take time. |
| FLEXIBILITY AND ADAPTABILITY | Structure has been designed to be very flexible and is very adaptable and upgradable. Materials are cut economically and can be re-used for permanent construction (timber/local mats). | | Structure has been designed to be very flexible and is very adaptable and upgradable. Materials are cut economically and can be re-used for permanent construction (timber local mats and CGI sheeting). | Structure is less flexible as it is semi-permanent. Materials are cut less economically and the timber/CGI sheeting are more difficult to be recuperated for permanent construction. |
| DURABILITY/ SUSTAINABILITY | This option is more durable than tents but after 18-24 months the plastic sheeting needs to be replaced (extra 60 dollars/2years). As roof would be covered, plastic sheeting should be more UV resistant. | | This option is more durable than tents but after 18-24 months the plastic sheeting needs to be replaced (extra 60 dollars/2years). As roof would be covered, plastic sheeting should be more UV resistant. | The CGI-sheets are long-lasting and this option can be used for a minimum of 5 years. Testing on the corrosion process in Bossaso needs to be investigated. |
| PROTECTION ISSUES | This option offers locable doors, but the plastic sheeting is easily penetrable which provides less security during the night. Not fire-resistant as the shelter is reinforced with all available local materials and covered with locally fabricated mats (hessian sacks, cardboard...) | | This option offers locable doors, but the plastic sheeting is not penetrable as the inside is clad with CGI sheets. More fire-resistant as the shelter is reinforced with CGI sheeting. | This option offers locable doors, provides high protection and is very fire-resistant . |
| IMPLEMENTATION/ CAPACITY OF ORGANISATION | Most organisations in Bossaso have no experience with owner driven approach. With proper small training package (good methodology), an owner driven approach is feasible . | | Most organisations in Bossaso have no experience with owner driven approach. With proper small training package (placing a good methodology), an owner driven approach is feasible . | Most organisations in Somalia have small experience with CGI construction for housing, but only through contractors. Simple construction, easily implemented with skilled craftsmen. |
| ACCEPTANCE | Looking at problems related to land-tenure and ownership, this solution offers a flexible approach (non permanent, but moveable). Plastic sheeting has a bad reputation. Needs to further identified with community and GVT | | Looking at problems related to land-tenure and ownership, this solution offers a flexible approach (non permanent, but moveable). Plastic sheeting has a bad reputation. Needs to further identified with community and GVT | Looking at problems related to land-tenure and ownership, this solution offers a flexible approach (non permanent, but moveable). Plastic sheeting has a bad reputation. Needs to further identified with community and GVT (raise of rent, chasing them off the land,...). Option considered preferably for relocation. Legal tenure is necessary. |
| QUALITY | Proper quality control is necessary with delivery of materials. If beneficiaries are properly trained, quality can be assured (experiences in Peru and Burkina Faso). | | Proper quality control is necessary with delivery of materials. If beneficiaries are properly trained, quality can be assured (experiences in Peru and Burkina Faso). | Proper quality control is necessary with delivery of materials. If beneficiaries are properly trained, quality can be assured. Thorough monitoring will be needed to assure quality measurements are put in place (both owner as contractor driven) |
| LIVEABILITY and DESIRABILITY | Plastic sheeting is not very suitable for hot humid climates. Connection between roof and walls should be kept open to ensure ventilation. Positioning is also important. Design is more culturally appropriate as community is involved in the process. | | Plastic sheeting is not very suitable for hot humid climates. Connection between roof and walls should be kept open to ensure ventilation. Positioning is also important. Design is more culturally appropriate as community is involved in the process. | CGI sheeting is not very suitable for hot humid climates. Open roofs help natural ventilation. Positioning is also important. Design is more culturally appropriate as community is involved in the process. |
| TEMPATURE (after field-analysis) | The local materials give a better insulation value to the roof/walls. | | Same as 3 | Depending on the height of the model (2.4m), the ventilation works well and ensures cooling. |
| BENEFICIARY INPUT | The sample model (pilot model) is designed together with the local population. | | The sample model (pilot model) is designed together with the local population. | The sample model (pilot model) is designed together with the local population. |

| PHASE | SEMI-PERMANENT | SEMI-PERMANENT | SEMI-PERMANENT | SEMI-PERMANENT |
|--|---|---|--|---|
| SHELTER SOLUTIONS | WATTLE AND DAUB / GRASS | WATTLE AND DAUB / CGI | WATTLE AND DAUB / CGI | STABILISED EARTH BLOCKS / CGI |
| PICTURE |  |  |  |  |
| COUNTRY | ETHIOPIA | ETHIOPIA | KENYA | KENYA |
| 2011 NRC DONOR | NRC built this as a prototype in Ethiopia. NOT KNOWN | | | |
| DESCRIPTION | The house is a combination of local durable materials and plastic sheeting (walls out of wattle/daub and out of plastic sheeting/grass). | | | |
| SIZE | Approximately 15m² | | | |
| COST | Approximately 500 dollars, depending on local markets. Proper local market analysis should be done. | | | |
| TIME-CONSTRAINT | Depending on the local materials (proper grass can only be found in certain seasons and a lot of water is necessary). | | | |
| CONSTRUCTION | Local durable materials in combination with plastic sheeting (grass, wattle and daub, bamboo,...) | | | |
| MARKET ANALYSIS | Seasonal to implement. | | | |
| COMMUNITY PARTICIPATION | Community much involved in design process. Construction can be done with IDP community with bigger training package, but will take time. | | | |
| FLEXIBILITY AND ADAPTIBILITY | The model can be put one after the other. The model can not be used everywhere as it depends on the local building techniques (availability of good earth and straw). | | | |
| DURABILITY/ SUSTAINABILITY | The semi permanent construction can last for 10 years. Local techniques are used and therefore sustainable. | | | |
| PROTECTION ISSUES | Forms more physical protection and is lockable. | | | |
| IMPLEMENTATION/ CAPACITY OF ORGANISATION | Most organisations in Somalia have small experience with CGI construction for housing, but only through contractors. Simple construction, easily implemented with skilled craftsmen. | | | |
| ACCEPTANCE | Looking at problems related to land-tenure and ownership, this solution is semi permanent and could cause problems in-between land-owners and IDP's (raise of rent, chasing them off the land,...). Option considered preferably for relocation. Legal tenure is necessary. | | | |
| QUALITY | As local techniques are used, there is a less need for trainings. Quality is assured by implementing local techniques which are widely known. | | | |
| LIVEABILITY and DESIRABILITY | Plastic sheeting is not very suitable for hot humid climates. Connection between roof and walls should be kept open to ensure ventilation. Positioning is also important. Design is more culturally appropriate as community is involved in the process. | | | |
| TEMPATURE (after field-analysis) | The local materials and mud walls give a good insulation value. The shelter is very high improving the ventilation. | | | |
| BENEFICIARY INPUT | High input. | | | |

| PHASE | SEMI-PERMANENT | PERMANENT |
|--|------------------------|--|
| SHELTER SOLUTIONS | WATTLE AND DAUB DADAAB | STONE WALL CONSTRUCTION |
| PICTURE | NO PICTURE YET |  |
| COUNTRY | KENYA | GALKAYO SOMALIA |
| 2011 NRC DONOR | | 250 permanent houses UNHCR |
| DESCRIPTION | | |
| SIZE | | |
| COST | | |
| TIME-CONSTRAINT | | |
| CONSTRUCTION | | |
| MARKET ANALYSIS | | |
| COMMUNITY PARTICIPATION | | |
| FLEXIBILITY AND ADAPTIBILITY | | |
| DURABILITY/ SUSTAINABILITY | | |
| PROTECTION ISSUES | | |
| IMPLEMENTATION/ CAPACITY OF ORGANISATION | | |
| ACCEPTANCE | | |
| QUALITY | | |
| LIVEABILITY and DESIRABILITY | | |
| TEMPATURE (after field-analysis) | | |
| BENEFICIARY INPUT | | |

| PHASE | PERMANENT | PERMANENT | PERMANENT | PERMANENT |
|--|---------------------------|---------------------------------------|-------------------|--|
| SHELTER SOLUTIONS | CEMENT BLOCK CONSTRUCTION | STABILISED SOIL BLOCKS (NON MACHINAL) | ISSB CONSTRUCTION | PERMANENT CONSTRUCTION OWNER DRIVEN |
| PICTURE | | | |  |
| COUNTRY | UNHABITAT GALKAYO | | DADAAB | |
| 2011 NRC DONOR | | | | NONE |
| DESCRIPTION | | | | The houses are built (partly or fully) by the IDPs themselves depending on their capacity and the in-country situation. A huge component of capacity building is integrated to ensure quality. Planning, monitoring and evaluation is done by local engineers. |
| SIZE | | | | 2,7*7,2=19,5m² AND permanent housing 20m² |
| COST | | | | 1 room/1 veranda house: OWNER DRIVEN :approximately 1400-1800 Usdollars (depending on beneficiary participation), inclusive materials (see BoQ). |
| TIME-CONSTRAINT | | | | Depending on land tenure, capacity of population and local economy 3-12 months implementation. |
| CONSTRUCTION | | | | permanent construction built in durable materials (proper foundation, reinforce adobe blocks, cementblocks, rocks and mortar, water-barrier, Doors and windows in plywood, roof in timber and CGI sheeting. |
| MARKET ANALYSIS | | | | The materials necessary are locally available, but if they can supply for big numbers is uncertain (especially CGI sheets, timber, cement). |
| COMMUNITY PARTICIPATION | | | | Community very much involved in the design process for permanent house IF owner driven. Construction can be done in participation with the IDP community, but skilled craftsmen are necessary. Big training component. |
| FLEXIBILITY AND ADAPTIBILITY | | | | Permanent construction can be designed to be flexible and upgradable. Construction is flexible as the trainings should include giving different choices to IDPs (adobe, stabilised blocks, cement blocks, rocks/mortar,...) |
| DURABILITY/ SUSTAINABILITY | | | | Permanent construction should last more than 20 years . |
| PROTECTION ISSUES | | | | This option offers locable doors, 100% security and is 100% fire-resistant. |
| IMPLEMENTATION/ CAPACITY OF ORGANISATION | | | | Most organisations in Somalia have small experience with permanent construction, but only through contractors. With a lot of training (placing a good methodology), an owner driven approach will be still difficult, but feasible. A lot of preparation is necessary. |
| ACCEPTANCE | | | | This option can only exist if there are legal documents claiming land tenure, ownership or donations. Permanent option. |
| QUALITY | | | | Proper quality control is necessary with delivery of materials. If beneficiaries are properly trained, quality can be assured. Thorough monitoring will be needed to assure quality measurements are put in place (both owner as contractor driven) |
| LIVEABILITY and DESIRABILITY | | | | Preferred option, but any form of land-tenure is necessary. |
| TEMPATURE (after field-analysis) | | | | Depending on technique, good insulation values (both night and day), if proper ventilation is taken into account. |
| BENEFICIARY INPUT | | | | The sample model (pilot model) is designed together with the local population. |