

DAMAGES AND SHELTER ASSISTANCE

- The **shelter related interventions** will depend on **damages** and **recovery capacity** of the HHs
- **Build Back Safer (BBS) information should be available** for all Beneficiaries and in general within the communities
- **Technical support** should be provided to the Beneficiaries receiving Shelter support (in-kind, vouchers,...)

		Damages	Recovery capacity	BBS information	Technical advice	Support for materials	Support for labour
1	 MINOR / NO DAMAGES	MINOR NO DAMAGES	High	X			
			Low	X			
2	 LIGHT DAMAGES - Roof and walls partially damaged - Safe to live in	LIGHT DAMAGES	High	X			
			Low	X	X	X	
3	 HEAVY DAMAGES - Roof off / partially destroyed - Walls / structure partially damaged - Unsafe to live in	HEAVY DAMAGES	High	X	X	X	
			Low	X	X	X	X
4	 COMPLETELY DESTROYED	DESTROYED	High	X	X		
			Low	X	X	X	X

MINIMUM STANDARDS

Before implementation phase, the minimum standards for shelter assistance must be approved by Govt. Agencies (DOPHRH, SDPI....).

As a reference, here below the table with minimum recommended shelter standards from SPHERE and the average size of the shelters encountered in the field.

Further discussions with Govt. Agencies are needed to agree on Shelters' minimum standards.

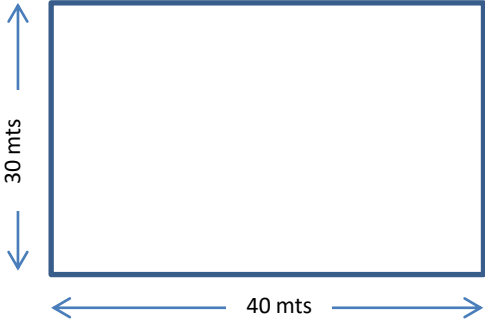
House Hold average size (Census 2017)

Census 2017 Final results	Resident Population 01/08/2017		HH	People/HH
		%		
MOZAMBIQUE	26.899.105		6.145.684	4,4
Zambézia	5.002.457	19%	1.158.620	4,3
Tete	2.551.826	9%	579.508	4,4
Manica	1.851.931	7%	380.853	4,9
Sofala	2.196.845	8%	460.969	4,8

Description		Average	Notes
House Hold average size (Census 2017)		5 people	
Minimum recommended Shelter area/person – SPHERE Standard		3,5 m2 /person	SPHERE standard
Minimum recommended Shelter area/HH – SPHERE Standard		18 m2	<u>Minimum</u> recommended standard for the average HH of 5 people
RURAL AREA	Average house size	24 – 30 m2	Standard type: sticks/adobe, adobe blocks Thatched roof
URBAN PERI-URBAN AREA	Average house size	18 – 20 m2	Standard type: cement blocks, fired bricks sticks/adobe, adobe blocks CGI roof, thatched roof

DPOPHRH - STANDARD PLOT FOR RESETTLEMENT = 30 x 40 mts

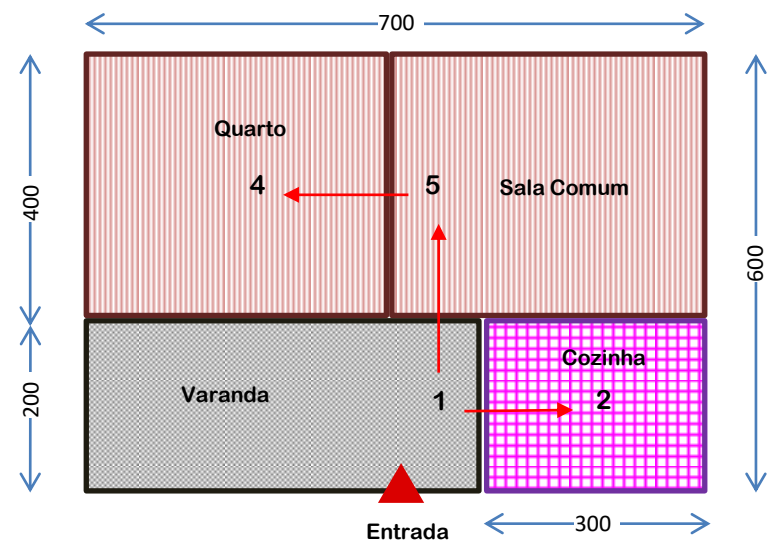
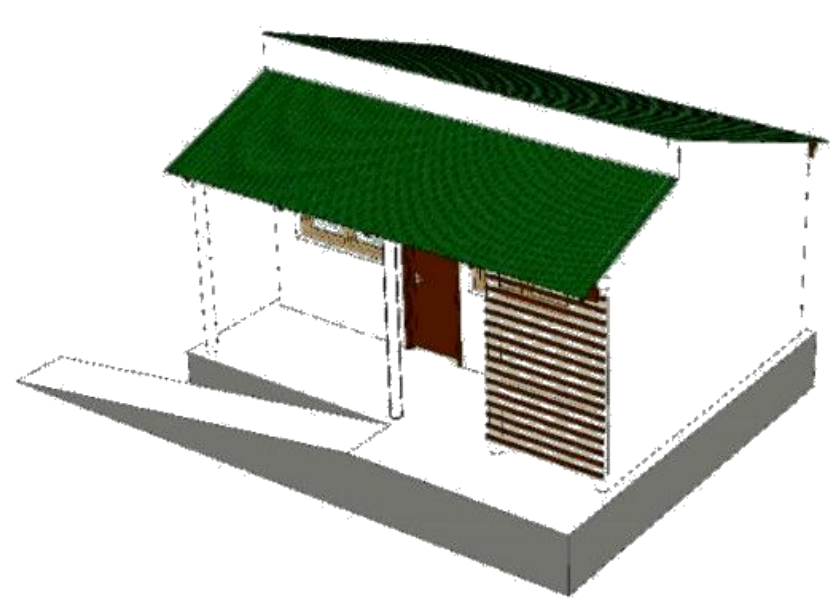
30 X 40 mts =
1'200 m2



STANDARD TYPOLOGIES AND COSTS

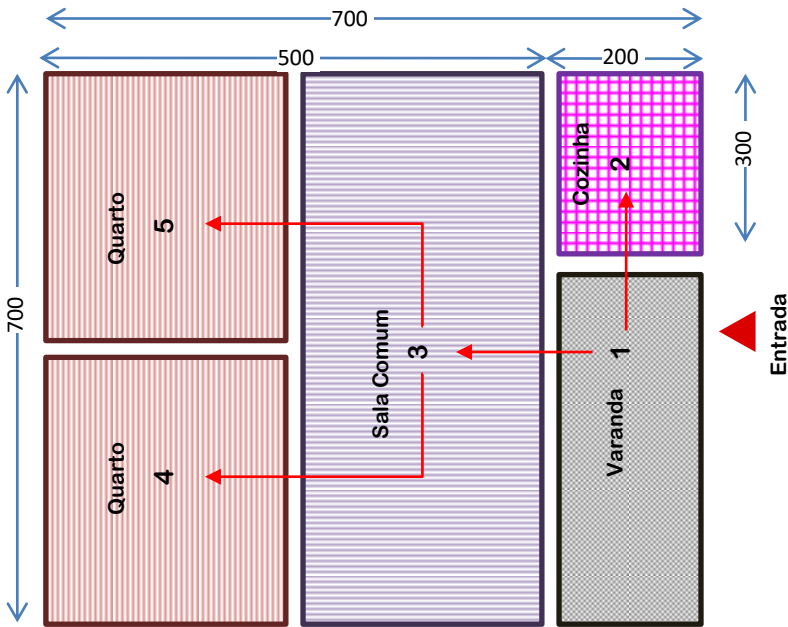
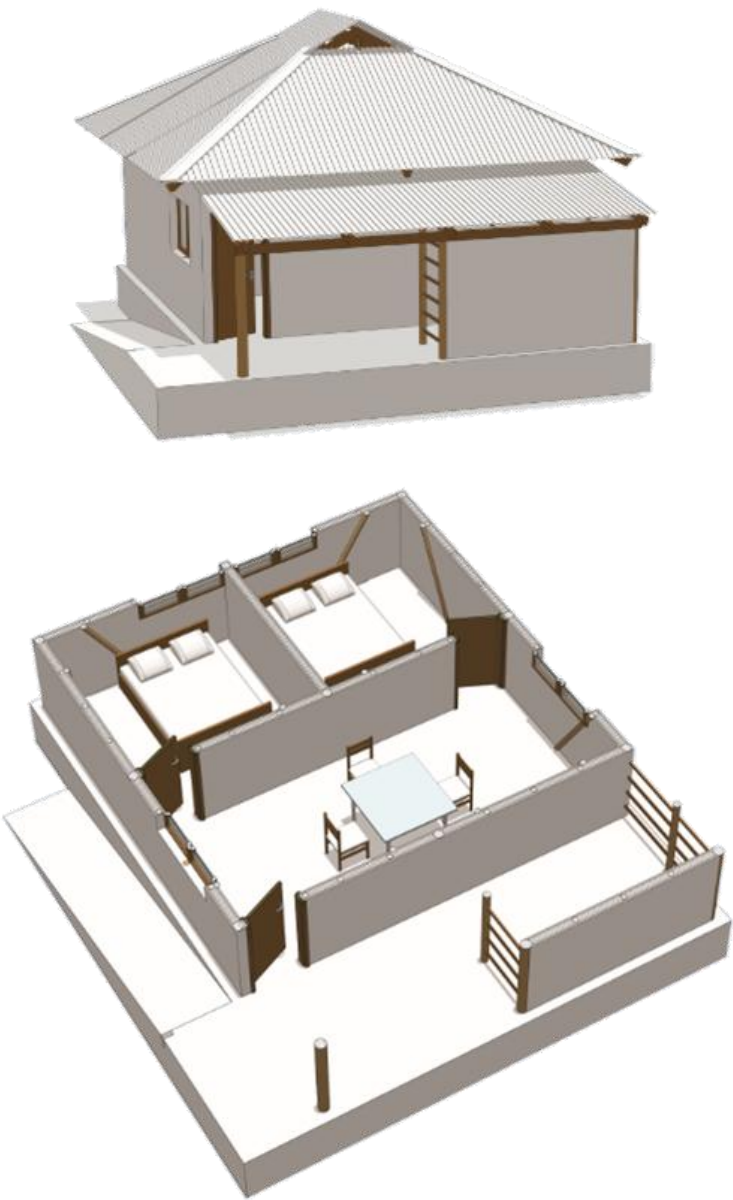
	Type	Roof	Area Covered	House Estimated Cost	Intervention type
AVERAGE STANDARDS ENCOUNTERED IN THE FIELD					
Standard	Sticks adobe / <i>Pau-a-pique maticado</i>	Chapa	30 m2	350 USD	
		Capim	30 m2	250 USD	
Standard	Adobe block / <i>Tijolo terra</i>	Chapa	30 m2	320 USD	
		Capim	30 m2	220 USD	
Standard	Compressed Stabilised Earth Block <i>Tijolo terra pressada estabilizada</i>	Chapa			
Standard	Cement block / <i>Bloque cimento</i>	Chapa	18 m2	1’200 USD	
Standard	Fired bricks / <i>Tijolo quemado</i>	Chapa	18 m2	1’100 USD	
GOVT AGENCIES STANDARDS – open for discussions					
DPOPHRH	Tipo T1 - Bloque cimento	Chapa	34 m2	6’800 USD	
DPOPHRH	Tipo T2 - Bloque cimento	Chapa	41 m2	8’990 USD	
NGOs STANDARDS – proposals under finalization					
IFRC	Sticks adobe / <i>Pau-a-pique maticado</i>	Chapa	18 m2	400 USD	Voucher
IFRC	Cement block / <i>Bloque cimento</i>	Chapa	18 m2	1’300 USD	Voucher
Alliance 2015	Sticks adobe / <i>Pau-a-pique maticado</i>			100 USD	Voucher
Save the Children	Compressed Stabilised Earth Block <i>Tijolo terra pressada estabilizada</i>	Chapa	18 m2	500 – 800 USD	In-kind
Care for Life	Cement block / <i>Bloque cimento</i>	Chapa	28,8 m2	1’500 USD	

DPOPHRH - Modelo T1 = 34 m2



Tipologia	T1	
Descricao	1 Quarto + Sala + Varanda + Cozinha + WC. Medidas tecnicas para ventos fortes e ciclones	
Area (m²)	com WC	sem WC
	43,98	34,06
Component	Cost (MZN)	Cost (USD)
Fundacao	103165,80	1691,24
Paredes	172000,50	2819,68
Cobertura	33166,50	543,71
Janelas e Portas	11500,00	188,52
Electricidade	32979,00	540,64
WC	62615,00	1026,48
Total	415426,80	6810,28
T1 Cost/m² with WC	9445,81	154,85
T1 Cost/m² no WC	10358,54	169,81

DPOPHRH - Modelo T2 = 41 m2



Tipologia	T2	
Descricao	2 Quarto + Sala + Varanda + Cozinha + WC. Medidas tecnicas para ventos fortes e ciclones	
Area (m²)	with WC	without WC
	50,92	41,00
Component	Cost (MZN)	Cost (USD)
Fundacao	149455,00	2450,08
Paredes	194012,50	3180,53
Cobertura	69106,00	1132,89
Janelas e Portas	21150,00	346,72
Electricidade	52114,00	854,33
WC	62615,00	1026,48
Total	548452,50	8991,02
T1 Cost/m² with WC	10770,87	176,57
T1 Cost/m² no WC	11849,70	194,26

RURAL

Sticks Adobe / Thatched roof
Pau-a-pique maticado / Capim



Surface	4 x 6 mts = 24 m2
Walls	Wooden structure, earth filling
Roof	Thatched roof (4 slopes / 2 slopes)
Cost	250 USD (300 including labor)
	Economic, quick construction (1 – 2 weeks) Requires local and neighboring resources and traditional knowledge Good resistance of the walls’ structure to the cyclone (net effect) when new Easy to repair when the earth in the lower part is washed away by rain / flood Straw roof: good insulation from heat
	Poor durability (wooden structure 2 to 3 years) , requires constant maintenance Straw roof: seasonal Roof exposed to strong wind
Cyclones Flooding Environment Roof may risk to fly away Plaster is washed away. Structure may resist to minor flooding Risks of deforestation with high number of houses to be built at the same time	

CODE	DESCRIPTION	UNIT	QTY	UNIT PRICE MT	UNIT PRICE 1 USD = 60 Mt	TOTAL PRICE Mt	TOTAL PRICE 1 USD = 60 MT	Remarks
1	LOCAL MATERIALS				TOTAL	13.000	216,67	
1.1	Bricks adobe 30x20x15 cm	pcs	1500	2	0,03	3.000	50,00	Adobe house
1.2	Stick large (wall structure)	pcs	100	15	0,25	1.500	25,00	Sticks/adobe house
1.3	Stick medium (roof structure)	pcs	200	10	0,17	2.000	33,33	
1.4	Stick small (support for adobe + roof connectors) roll 20 pcs	roll	15	30	0,50	450	7,50	
1.5	Straw (roof cover)	roll	40	35	0,58	1.400	23,33	seasonal
1.6	Cashew nut oil - tank 20 lts	tank	1	200	3,33	200	3,33	
1.7	Rope (local fiber)	pcs	1	200	3,33	200	3,33	
1.8	Window 60x60 cm	pcs	1	250	4,17	250	4,17	
1.9	Door wood 90x210 cm	pcs	1	4000	66,67	4.000	66,67	Price depending on quality Wooden door
2	LABOR				TOTAL	3.500	58,33	
2.1	Mason	lumpsum	1		0,00	-	0,00	The walls are often done directly by the owner
2.3	Carpenter	lumpsum	1	2000	33,33	3.500	58,33	

RURAL

Adobe bricks / Thatched roof

Bloco de adobe / Capim



Surface	4 x 6 mts = 24 m2
Walls	Sundried earth bricks (30 x 15 x 20 cm)
Roof	Thatched roof (4 slopes / 2 slopes)
Cost	220 USD (270 including labor)
+	Economic, quick construction (1 – 2 weeks)
	Economic (approx. 15% less than Pau a pique/adobe, due to lower use of sticks)
	Requires local and neighboring resources, traditional knowledge
	Easy to repair when the earth in the lower part is washed away by rain / flood
-	Medium length construction (approx. 1 month): Requires molding and curing of the bricks.
	Bricks fabrication is linked to season (not recommended during rainy season)
	Durability: poor durability in case of direct rain , requires constant maintenance
Flooding	Roof may risk to fly away
Cyclones	House is washed away
Environment	Reduced use of timber (mostly for roofing)
	Risks of deforestation with high number of houses to be built at the same time

CODE	DESCRIPTION	UNIT	QTY	UNIT PRICE Mt	UNIT PRICE 1 USD = 60 Mt	TOTAL PRICE Mt	TOTAL PRICE 1 USD = 60 Mt	Remarks
1	LOCAL MATERIALS				TOTAL	10.575	176,25	
1.1	Bricks adobe 30x20x15 cm	pcs	1500	2	0,03	3.000	50,00	Adobe house
1.2	Stick large (wall structure)	pcs	5	15	0,25	75	1,25	Sticks/adobe house
1.3	Stick medium (roof structure)	pcs	100	10	0,17	1.000	16,67	
1.4	Stick small (support for adobe + roof connectors) roll 20 pcs	roll	15	30	0,50	450	7,50	
1.5	Straw (roof cover)	roll	40	35	0,58	1.400	23,33	seasonal
1.6	Cashew nut oil - tank 20 lts	tank	1	200	3,33	200	3,33	
1.7	Rope (local fiber)	pcs	1	200	3,33	200	3,33	
1.8	Window 60x60 cm	pcs	1	250	4,17	250	4,17	
1.9	Door wood 90x210 cm	pcs	1	4000	66,67	4.000	66,67	Price depending on quality Wooden door
2	LABOR				TOTAL	3.000	50,00	
2.1	Mason	lumpsum	1	1500	25,00	1.500	25,00	
2.3	Carpenter	lumpsum	1	1000	16,67	1.500	25,00	

URBAN – PERI URBAN

Cement blocks / CGI roof

Blocos de cimento / Chapas



Surface

3 x 6 mts = 18 m2

Walls

Cement blocks (10 x 20 x 40 cms)

Roof

CGI (1 slope)

Cost

1'200 USD (1'400 including labor)

+

Good resistance to cyclone and flood (when properly built)

Fire resistance

Environment

Reduced use of wood

-

Concrete blocks often of very poor quality (ratio cement : sand = 1:15, instead of 1:9 as recommended)

Long construction (1 month)

Expensive for the HH: often use of poor/insufficient materials

Flooding

Roof may risk to fly away: good anchoring

Cyclones

House is washed away

Environment

Cement production has negative impact on environment

CODE	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE Mt	UNIT PRICE 1 USD = 60 Mt	UNIT PRICE Mt	TOTAL PRICE 1 USD = 60 Mt	Remarks
1	LOCAL MATERIALS				TOTAL	72.650	1210,83	
1.1	Cement bags (40 kgs)	bag	50	430	7,17	21.500	358,33	
1.2	Sand	lumpsum	1	6000	100	6.000	100,00	
1.3	Cement blocks 10 x 20 x 40 cms	pcs	800	20	0,33	16.000	266,67	walls
1.4	Cement blocks 15 x 20 x 40 cms	pcs	50	25	0,42	1.250	20,83	foundations
1.5	Rebar 10 mm (length 6 mts)	pcs	12	300	5,00	3.600	60,00	
1.6	Rebar 6 mm (length 6 mts)	pcs	10	150	2,50	1.500	25,00	
1.7	Rafters	pcs	12	600	10,00	7.200	120,00	
1.8	Umbrella nails 7 cms	kgs	3	200	3,33	600	10,00	
1.9	CGI (0,70 x 3,5 mts - thick 0,4 mm)	pcs	10	600	10,00	6.000	100,00	
1.10	Tie wire, diam. 2 - roll 2 kgs (approx 200 mts)	kgs	2	1000	16,67	2.000	33,33	
1.11	Window 60x60 cm	pcs	2	1500	25,00	3.000	50,00	
1.12	Door wood 90x210 cm	pcs	1	4000	66,67	4.000	66,67	Average quality
2	LABOR				TOTAL	10.500	175,00	
2.1	Mason / Carpenter	lumpsum	1	10000	166,67	10.000	166,67	
2.2	Transport	lumpsum	1	500	8,33	500	8,33	

URBAN – PERI URBAN

Fired bricks / CGI roof
Tijolo queimado / Chapas



Surface	3 x 6 mts = 18 m2
Walls	Fired bricks (6 x 12 x 24 cms)
Roof	CGI (1 slope)
Cost	1'100 USD
+	Good resistance to cyclone and flood (with cement mortar)
	Fire resistance
-	Long construction (1 month)
	Often the H use earth mortar instead of cement mortar
Flooding	Roof may risk to fly away
Cyclones	House is washed away
Environment	Use of wood for burning the bricks: risks of deforestation

CODE	DESCRIPTION	UNIT	QTY	UNIT PRICE Mt	UNIT PRICE 1 USD = 60 Mt	UNIT PRICE Mt	TOTAL PRICE 1 USD = 60 Mt	Remarks
1	MATERIALS				TOTAL	67.400	1123,33	
1.1	Cement bags (40 kgs)	bag	50	430	7,17	21.500	358,33	
1.2	Sand	lumpsum	1	6000	100	6.000	100,00	
1.3	Fired bricks 6 x 12 x 24 cms	pcs	6000	2	0,03	12.000	200,00	walls
1.4	Rebar 10 mm (length 6 mts)	pcs	12	300	5,00	3.600	60,00	
1.5	Rebar 6 mm (length 6 mts)	pcs	10	150	2,50	1.500	25,00	
1.6	Rafters	pcs	12	600	10,00	7.200	120,00	
1.7	Umbrella nails 7 cms	kgs	3	200	3,33	600	10,00	
1.8	CGI (0,70 x 3,5 mts - thick 0,4 mm)	pcs	10	600	10,00	6.000	100,00	
1.9	Tie wire, diam. 2 - roll 2 kgs (approx 200 mts)	kgs	2	1000	16,67	2.000	33,33	
1.10	Window 60x60 cm	pcs	2	1500	25,00	3.000	50,00	
1.11	Door wood 90x210 cm	pcs	1	4000	66,67	4.000	66,67	Average quality
2	LABOR				TOTAL	10.500	175,00	
2.1	Mason / Carpenter	lumpsum	1	10000	166,67	10.000	166,67	
2.2	Transport	lumpsum	1	500	8,33	500	8,33	

AREA DE RESENTEAMENTO E MAPA DE RISGOS (Resettlement and Risk/Hazard Map)

Resettlement sites should be assessed to ensure the risks/hazards are minimised (reduced)
Risks/hazard mapping should be supported to ensure that DRR components are included in recovery assistance

