



SHELTER DESIGNS

IN THE NORTHERN REGION OF
MOZAMBIQUE

CATALOGUE OF THE DIFFERENT
SOLUTIONS APPLIED BY
SHELTER CLUSTER PARTNERS



Mozambique Shelter Cluster
ShelterCluster.org
Coordinating Humanitarian Shelter

- OCTOBER 2021 -



Nanjua B (Marocani), Ancuabe



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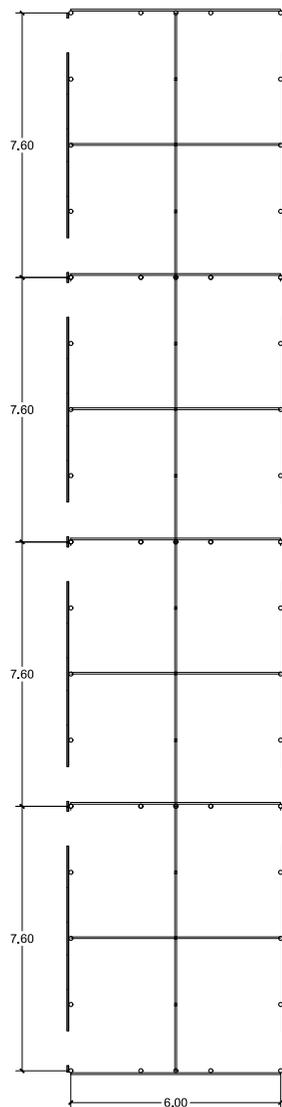
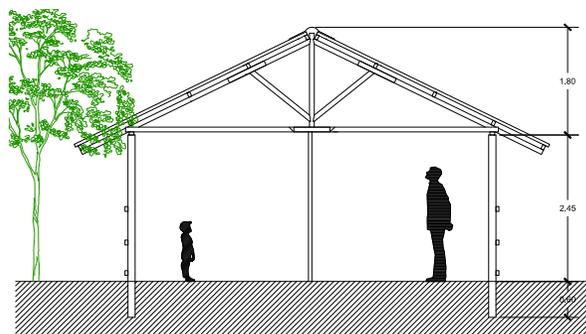


Ntele, Montepuez

SHELTER ASSISTANCE TYPE

B 1 2 3

METHODOLOGY	Distribution of Basic HH kit for self-construction
AREA	9-18 sqm (depending on the solution)
COST	179 USD
TIME	Depending on the solution chosen
MATERIALS PROVIDED	Tarp + tools (+NFIs)
LIFESPAN	6-12 months
HLP	Plots allocated by CCCM – DUAT for the site
+	Supports coping mechanisms, increasing resilience.
-	Resilience of shelters not guarantee. Environmental impact due to the uncontrolled collection of local materials. Lack of technical support affects the impact.
CONCLUSION	This minimum kit, supported by tools and technical guidance for BBB practices would be the most efficient, but vulnerable HHs would require assistance for construction.



SHELTER ASSISTANCE TYPE



METHODOLOGY	Provision of materials and construction by 2 skilled carpenters and 3 assistants
AREA	11,4 sqm/unit – 45,6 sqm/module – 182,4 sqm/block
COST	295 USD/unit – 4,700 USD/block 16 units
TIME	14 days
MATERIALS PROVIDED	Wooden poles, bamboos, CGIs, nails, rope, etc.
LIFESPAN	1-2 years
HLP STATUS	Plots allocated by CCCM – DUAT for the site
+	Shelter solution for people on transit Independents units within the communal shelter
-	Limited space Lack of privacy Temporary solution for a limited period of time
CONCLUSION	This communal shelter is adequate for people in transit, before relocation is done to the site or for a limited period of time while traveling to the final destination.



SHELTER ASSISTANCE TYPE

B **1** 2 3

METHODOLOGY	Distribution of key materials and labor provided
AREA	8 sqm
COST	99 USD (with labor)
TIME	1,5– 4 hours
MATERIALS PROVIDED	Bamboo, common nails 3.5”-5”, recycled rubber cord “corda de pneo”, bamboo mat “esteira”, tarpaulin.
LIFESPAN	6 months
HLP STATUS	Plots allocated by CCCM – DUAT for the site
	Quick construction
	Transport materials for a high number of shelters in the same truck.
	Low cost
	Good dimensions for temporary centres.
	Easy to transport
	Limited space and lack of privacy
	Requires treatment of bamboo
	Not easy to upgrade
	No elevation from the ground
	Protection concerns as there are no internal divisions and no doors
CONCLUSION	It is a fast solution for an immediate response in a temporary site but needs to immediately be upgraded if the intention is of a longer stay.





Quirimba, Ibo



Quirimba, Ibo



Quirimba, Ibo

SHELTER ASSISTANCE TYPE

B **1** 2 3

METHODOLOGY	Distribution of materials and labor provided
AREA	11 sqm
COST	41 USD (labor?) – 2,500 MZN
TIME	1 day
MATERIALS	All materials distributed: bamboo, common nails 3.5”-5”, recycled rubber cord “corda de pneo”, bamboo mat “esteira”, tarpaulin.
LIFESPAN	6 months
HLP STATUS	Area for construction provided by local authorities - DUAT TBC
	Can be built quickly
	It is not necessary technical support
	It was accepted by the community
	Pieces of the roof very well tied
	Resilient against strong winds community
	Can be easily upgraded
	It is cheap
	It is necessary to be trained
	It is necessary to have some technical skills
	It is different from the common shelters
	Difficult to replicate by the community without training
	It is a very resilient solution for emergency shelter, with great optimization of resources, and attractive for the community, however, its technical complexity requires technical skills and training.
CONCLUSION	

+

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SHELTER ASSISTANCE TYPE

B **1** 2 3

METHODOLOGY

Materials and labor provided

AREA

9 sqm

COST

26 USD

TIME

1 day

MATERIALS PROVIDED

Tarp, Bamboo, Tie Wire, Nails, etc

LIFESPAN

6-12 months

HLP STATUS

Plots allocated by CCCM – DUAT for the site



Construction time is very short

Economic

Quickly assembled by low skilled people

Easy to be extended



Area of coverage is good for 3 family members, when normal family size is 5

Requires treatment of bamboo

Not easy to upgrade

No elevation from the ground

Protection concerns as there are no internal divisions and no doors

CONCLUSIONS

This solution was used as a phased approach in order to allocate families in their plots, while they could start the construction of their permanent shelter. However, as this solution covers main shelter needs, community was not encouraged to build permanent shelters quickly. Strong mobilization required.



Meculane, Chiure



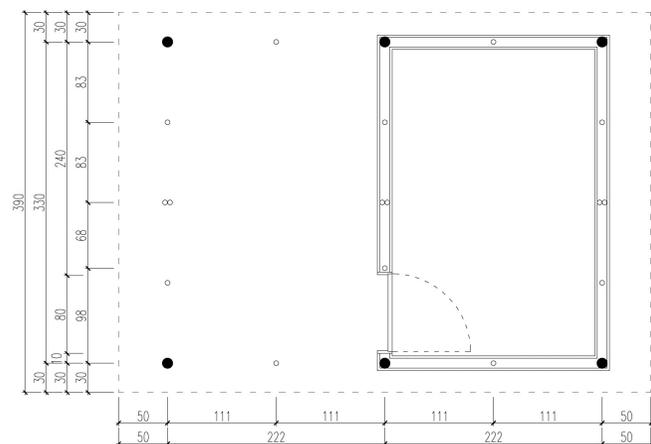
Meculane, Chiure



Cujupane, Ancuabe



Cujupane, Ancuabe



SHELTER ASSISTANCE TYPE

B 1 2 3

METHODOLOGY

Materials provided and construction done by a team of 4-6 people + additional team for mudding task to assist to vulnerable families

AREA

8 sqm (+8 sqm exterior/kitchen area) to be extended to 16 sqm

COST

120 USD

TIME

4– 6 hours

MATERIALS PROVIDED

Tarp, Wooden poles, bamboo, tie wire, rubber rope and nails

LIFESPAN

12 months

HLP STATUS

Plots allocated by CCCM – DUAT for the site



Strong community appropriation of the model, which has ensured the transmission of knowledge.

Improvement on local construction techniques.

Easy upgrading and scalability.

More durable solution including local materials and technique



Lifespan reduced due to the tarp lifespan

Risk during the rainy season due to lack of foundation

CONCLUSIONS

Improved immediate emergency shelter solution in terms of technique and size. This core-emergency shelter is inspired in local construction, so it has generated a great degree of acceptance.

However, the roofing materials require constant maintenance and replacement to ensure their durability.

SHELTER ASSISTANCE TYPE

B 1 **2** 3



Corrane, Meconta



Corrane, Meconta



Corrane, Meconta

METHODOLOGY

Distribution of materials, and self-construction with technical guidance

AREA

18 sqm

COST

236 USD (including labor)

TIME

3 days

MATERIALS PROVIDED

Materials provided: Bamboo, local wooden poles “estacas”, common nails 3.5”-5”, recycled rubber cord “corda de pneo”, bamboo mat “esteira”, tarpaulin, burnt wire, thick plastic.

LIFESPAN

6-12 months (depending on the upgrade)

HLP STATUS

Plots allocated by CCCM in coordination with INGD – DUAT for the site



Construction time is adequate
Possibilities of expansion and upgrade
Area of coverage is good for a family size of 5
Economic
Assembled by low skilled people
Offers strong structure with bracings
Allows internal divisions



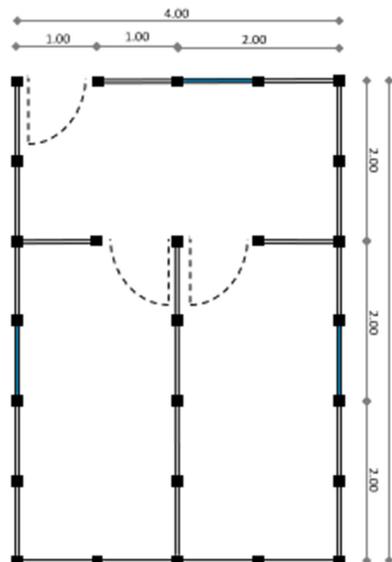
Not adequate for most immediate response
Requires treatment of bamboo or stakes
No elevation from the ground
To ensure a good upgrade, it should incorporate stronger foundations

CONCLUSION

Efficient design for immediate upgrade of most emergency shelter solution, providing more adequate space, and that also can be further upgraded. It has good acceptance in the community.

SHELTER ASSISTANCE TYPE

B 1 2 **3**



METHODOLOGY

Construction by skilled and unskilled teams

AREA

24 sqm (6x4 m)

COST

1,300-1,600 USD (including labor)

TIME

7 days

MATERIALS PROVIDED

Bamboo, local wooden poles “estacas” (Pau Rachado\Eucaliptus), Wooden poles “Barrotes”, Corrugated Galvanized Iron roof sheet, Iron rods, cement, fixing materials, doors, windows, etc.

LIFESPAN

5-10 years

HLP STATUS

IDPs living in resettlement sites on plots of 20m x 30m provided by the Government.



Possibilities of expansion and upgrade
Enough space and privacy
Offers strong foundations and strong structure with bracings



Use of woods and bamboo is high
Cost may be high for the most vulnerable communities.
Requires plastering to protect the walls from rain, this increases the cost

CONCLUSION

It is a fast solution for a permanent shelter solution, with improvement of local construction techniques that can easily be replicated by the community. It has good acceptance in the community.

*PALPOC defines this solution as a Permanent Shelter Solution



SHELTER ASSISTANCE TYPE

B 1 2 **3**



Namulimuite, Mecufi



Namulimuite, Mecufi

METHODOLOGY

Construction done by 14 daily workers

AREA

24,5 sqm

COST

500 USD

TIME

8 days

MATERIALS RECEIVED

Wooden poles, timber, bamboo, CGI, tire wire, nails, rope, etc.

LIFESPAN

5-10 years

HLP STATUS

Resettlement site provided by the Government.



Easy to build

Traditional technique well known by the community

It can be upgraded

Improved ventilation and privacy

Use local materials

Adequate overhang



High quantity of materials required

Requires maintenance

CONCLUSION

This permanent solution is adequate for the context as it is socially accepted and can be easily replicated. It incorporates BBB principles, with some attention to the traditional technique, to increase its resilience.



SHELTER ASSISTANCE TYPE

B 1 2 3

METHODOLOGY Construction with hired labor and support from beneficiaries

AREA 18 sqm

COST 670 USD

TIME 5 days

MATERIALS PROVIDED Tarp, wooden poles, bamboo, CGIs, Tie Wire, Nails, rope, cashew nut oil, bolt lock, etc

LIFESPAN 15 years

HLP STATUS Plots allocated by CCCM – DUAT for the site



More covered space and privacy.
More durability
Safe construction
Technical knowledge provided to beneficiaries



It takes too long to be built.
Requires technical skills.
If built by beneficiaries, requires a lot of mobilization.

CONCLUSION

This permanent solution is adequate for the context as it is socially accepted and can be easily replicated. It incorporates BBB principles, with some attention to the traditional technique, to increase its resilience.



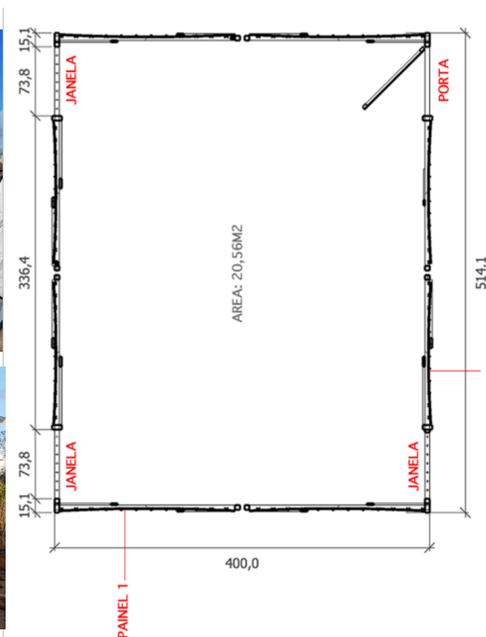
Ibo Sede, Ibo



Ibo Sede, Ibo



Ibo Sede, Ibo

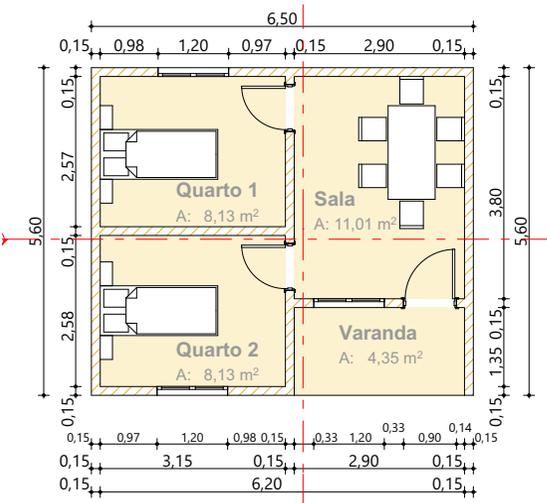


SHELTER ASSISTANCE TYPE

B 1 2 3

METHODOLOGY	Construction with skilled labor
AREA	20.54 sqm
COST	1,700 USD (including labor)
TIME	1 day prefabrication + 9 days construction
MATERIALS PROVIDED	Bamboo, wooden poles, CGI roofing, mosquito net, chicken net, rebars, cement, fixing materials, etc.
LIFESPAN	10-20 years
HLP STATUS	Beneficiaries own the land
	Construction time adequate
	Resilient solution
	Can be upgraded easily
	Proper ventilation
	Adequate space, privacy and safety
	It requires technical support
	Cannot be replicated by the community
CONCLUSION	It is a fast solution for a permanent shelter solution. Adapted technique using local materials, but too complex to be replicated, especially in remote areas (islands).





SHELTER ASSISTANCE TYPE

B 1 2 **3**

METHODOLOGY	Construction with hired labor
AREA	33,6 sqm
COST	840 USD (including labor)
TIME	6 days
MATERIALS RECEIVED	Wooden poles, bamboo, CGI, tire wire, nails, door, windows, cashew nut oil, locks, etc.
LIFESPAN	25 years
HLP STATUS	Land selected by the Government - DUAT TBC
	Easy to build
	Traditional technique well known by the community
	It can be upgraded
	Improved ventilation and privacy
	Use local materials
	Lack of community participation
	Lack of elevated platform
	Small overhang by the sides to protect the mud walls
	Mud walls recommendation
CONCLUSION	This permanent solution is adequate for the context as it is socially accepted and can be easily replicated. However, technique can be improved by including more BBB principles, and community participation should be encouraged.



SHELTER ASSISTANCE TYPE

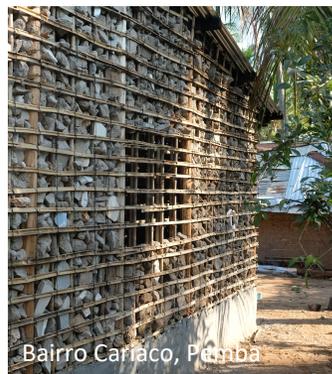
B 1 2 **3**



Josina Machel, Pemba



Bairro Carraco, Pemba



Bairro Carraco, Pemba

METHODOLOGY Construction with hired labor (skilled and unskilled)

AREA 24 sqm (6x4 m)

COST 1,300-1,600 USD (including labor)

TIME 7 days

MATERIALS PROVIDED

Bamboo, local wooden poles “estacas” (Pau Rachado\Eucaliptus), Wooden poles “Barrotes”, Corrugated Galvanized Iron roof sheet, Iron rods, cement, fixing materials, doors, windows, etc.

LIFESPAN 5-10 years

HLP STATUS

IDPs living in resettlement sites on plots of 20m x 30m provided by the Government.



Possibilities of expansion and upgrade
Enough space and privacy
Offers strong foundations and strong structure with bracings



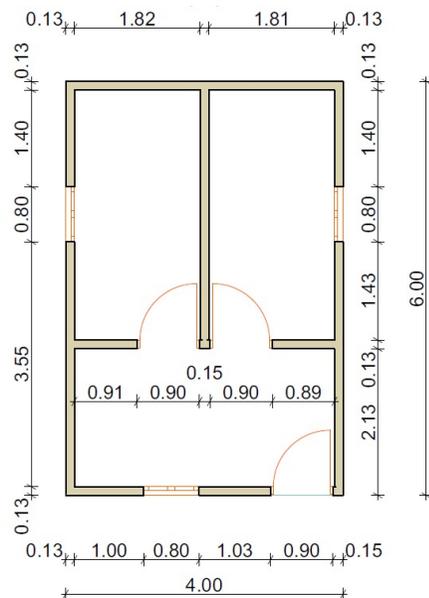
Use of woods and bamboo is high
Cost may be high for the most vulnerable communities.
Requires plastering to protect the walls from rain, this increases the cost

CONCLUSION

It is a fast solution for a permanent shelter solution, with improvement of local construction techniques that can easily be replicated by the community. It has good acceptance in the community.

SHELTER ASSISTANCE TYPE

B 1 2 **3**



METHODOLOGY

Construction with hired labor (skilled and unskilled)

AREA

24 sqm

COST

1,800 USD (including labor)

TIME

10 days

MATERIALS PROVIDED

CSEB, wooden poles, CGI roofing, Iron rods, cement, fixing materials, doors, windows, etc.

LIFESPAN

15-30 years

HLP STATUS

Resettlement site provided by the Government.



Possibilities of expansion and upgrade

Adequate space and privacy

Offers strong foundations and strong reinforced walls

Cheaper and more sustainable solution vs. cement blocks



CSEB bricks vary in quality when done with manual

machine or when done with industrial machine

Cost may be high for the most vulnerable communities.

CONCLUSION

Design that offers a permanent shelter solution, improvement of local construction techniques (from the regular soil brick to a stabilized soil brick) that can easily be replicated by the community with appropriate machinery. It has good acceptance in the community.

**PALPOC defines this solution as a Permanent Shelter Solution*



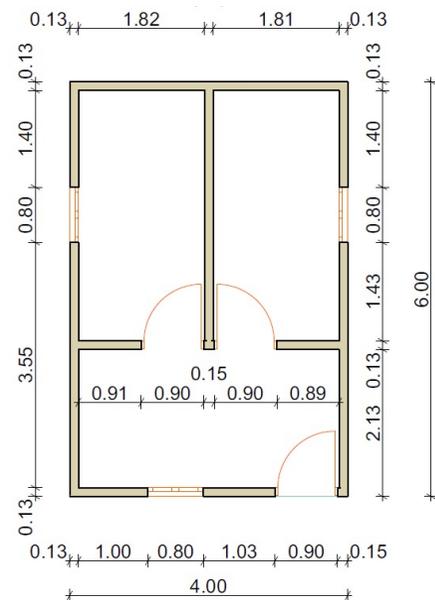
Mazuane, Memba



Mazuane, Memba



Mazuane, Memba



Mazuane, Memba

SHELTER ASSISTANCE TYPE

B 1 2 **3**

METHODOLOGY	Construction with hired labor (skilled and unskilled)
AREA	24 sqm
COST	2,300 USD (including labor)
TIME	10 days
MATERIALS PROVIDED	Cement blocks (10", 15", 20"), Wooden poles, CGI roof sheet, Iron rods, cement, fixing materials, doors and windows, etc.
LIFESPAN	15-30 years
HLP STATUS	Resettlement site provided by the Government.
	<p>+</p> <p>Possibilities of expansion and upgrade Adequate space and privacy (internal partitions) Offers strong foundations and strong reinforced walls</p> <p>-</p> <p>Cement bricks vary in quality when done with manual machine or when done with industrial machine Cost is high as it requires more cement and iron</p>
CONCLUSION	Design that offers a permanent shelter solution that can easily be replicated by the community with appropriate training and orientation. It has good acceptance in the community.

**PALPOC defines this solution as a Permanent Shelter Solution*

IMPLEMENTED BY:



SUPPORTED BY:

