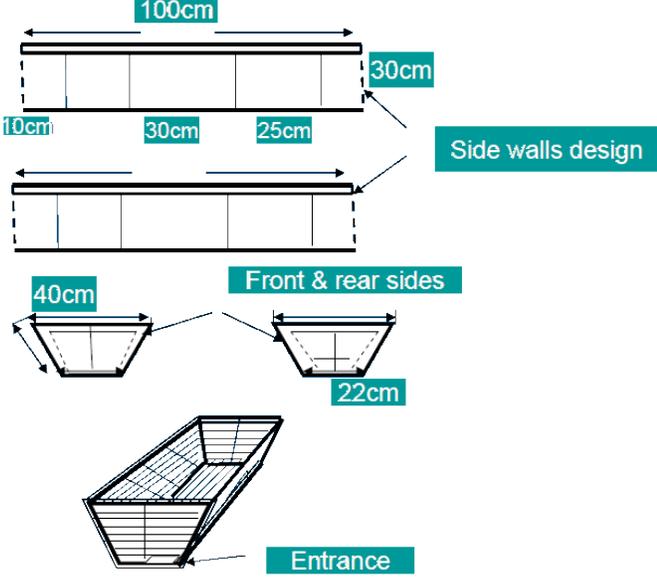
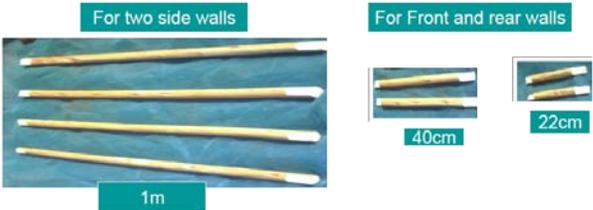
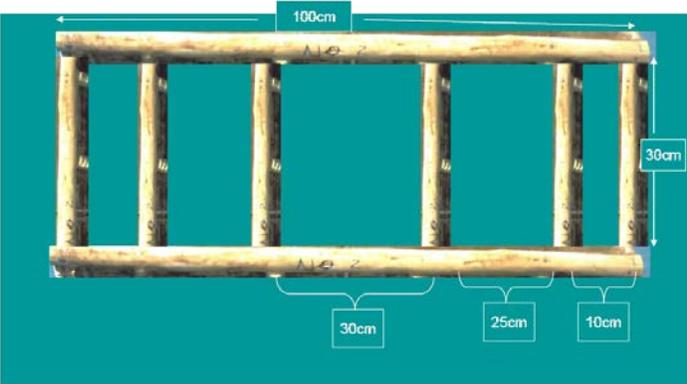
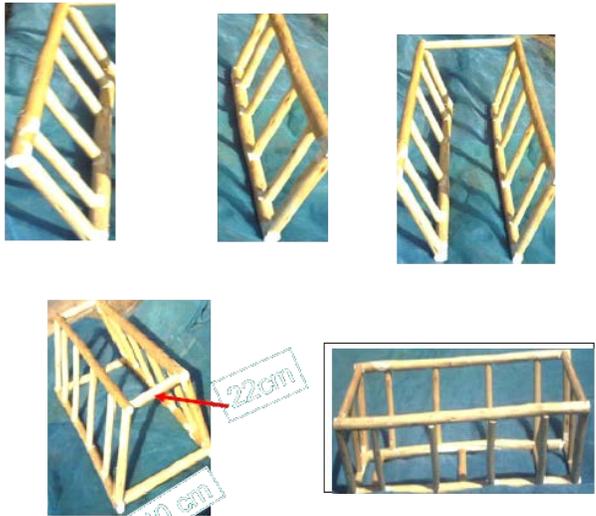


ALTERNATIVE NON-TIMBER TOP BAR HIVE FROM CHEAP AND LOCALLY AVAILABLE MATERIALS

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For the last many decades attempts were made to improve beekeeping conditions. Particularly timber made top bar hive has been considered as an appropriate hive for low income groups. Despite long period attempts to introduce these hives, still did not reach to the majority of rural beekeepers. In this regard alternative and non-timber top bar hives and frames made from cheap and locally available materials have been tested for ease of construction, adoption & productivity of colonies at farmers level. The materials used are: *Arundinaria alpine* (bamboo), *Arundinaria donax*, *Oxytenathera abyssinica* and *Eucalyptus* sticks. Such & similar types of materials are widely available in different ecosystems of many subtropical African countries. The design is similar to the KTBH with some modifications:

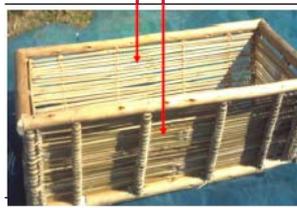
 <p style="text-align: center;">Side walls design</p> <p style="text-align: center;">Front & rear sides</p> <p style="text-align: center;">Entrance</p>	<p>Solid sticks for hive body frames:</p> 
<p>Ways of fixing the side walls:</p> 	<p>Different steps of hive wall frames construction:</p>  <p>1st Each sides has to be constructed separately, then the two sides are fixed at the top and bottom ends.</p>

Construction of hive wall:

1st the front and rear walls

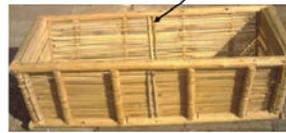


Then the two side walls

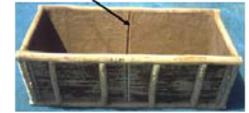


Partition groove making for partition board & Q.E:

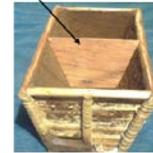
Groove making



Plastering



Partition boards



Q.E.



Handmade top-bars preparation

- ❖ Production of suitable top-bar is the most important part of movable hive construction
- ❖ The major production cost of a hive (labor & time) goes for the production of top bars or frames

Machine made timber top-bars



Eucalyptus round top-bars



A. donax round top-bars



Bamboo splits top-bars



- Some of the precautions are
- * Materials should be mature
 - * Dry
 - * Straight
 - * Uniform (3.2cm)

How the top-bars are fit to the hive



Bamboo splits top-bars



Round sticks top-bars



Sheet metals or plastic can be used as roofing materials



Insulating materials Under the roof



Hives can be placed on stands or hung (but should be in a shadier spot than shown here).

The handmade top top-bars were tested on large number of honeybees colonies. The experiment showed the absence of significant differences between the machine & handmade top bars in honey yield, comb spacing, bee space, brood cell depth. Relative advantages of this hive:

- Better honey yield 3x > than traditional hive
- Better quality honey
- Easy to construct using hand tools
- 5-8 times cheaper than timber made hives
- Allows to use wide range of materials
- Environmentally friendly
- Can be used for simple colony multiplication
- Can be done by women and persons with disability