



1. Opoku's house walls front view

2. Window structure detail

3. Roof structure in progress



Photo credit : Lara Weiler

Opoku's house is located at Abetenim, in the Ashanti region of Ghana. Opoku is a farmer with a wife and three children and he is the first villager willing to build his own rammed earth house. When we arrived at the village the foundations were completed, but unfortunately he ran out of money when he was about to buy the wood needed for the formworks.

Since, during another project, we designed metal formworks as a tool for the community, we thought it could have been a great chance to test it in a low-budget situation and verify its actual usefulness. We thus offered Opoku to continue together the construction, since using metal formworks his budget was enough to go on.

The project has three rooms, connected by an outside veranda, each room has only a window to prevent from overheating due to solar radiation. The thick walls keep the interior spaces cool thanks to their high thermal mass. Any decision was taken according to Opoku's budget only and developing user-specific solutions.

The walls construction lasted 4 weeks. The construction site is still in progress thanks to international volunteers coming to the village as a continuous shared development.

## Opoku's house

# LOAD - Local Actions for Development



1. Detail of the rammed earth wall of the back side

2. Kofi and Opoku's brother ramming the fourth layer

3. Lorenzo and Opoku preparing the mix

4. Internal view of the future bedroom



*5) Facilitate the use of appropriate technologies, materials and labour adequate to local values, to the cultural specificity and responsive to the natural environment*

The technical choices aimed to provide a valid and attractive alternative to the increasingly spread of concrete blocks buildings which are totally unsuitable to the tropical climate.

The rammed earth technique merges traditional local materials with more efficient construction methods, in terms of construction speed and durability. Furthermore since the lack of maintenance procedures is one of the first causes of crashes, the higher resistance to the most common erosion factors increases the overall safety of the dwelling conditions.

The building process included the introduction of a reusable metal formwork set, which was designed together with a group of young local labourer specialized in the rammed earth techniques. The local team is meant to continue the construction activities of low-cost housing units for interested villagers aware of the quality of this technique, in terms of thermal comfort and durability, compared to the concrete blocks. With the introduction of metal formworks the construction process definitely speeds up compared to the usual method which uses wooden ones.

The ease of set up and dismantling processes, together with the extreme reduction of drying out waiting time marked out the velocity of the method and its usability by unskilled labour.

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*6) Share knowledge, promote discussion, reflection and awareness, and collaborate in the advancement of the 'social production of habitat'*

The building is the first rammed earth dwelling unit in Abetenim Village. The construction has been totally financed by the owner, a farmer with normal incomes considering the local average. The building process raised from the sharing of traditional knowledge in earth construction methods and the introduction of time-cost optimization solutions.

Opoku has been participating as a labourer in the construction of other public buildings of the village made with rammed earth and after this opportunity he grew the aspiration for a new house with the same technique, understanding its benefits.

The fundamental aspect of this project was that our team provided just technical support during the whole process and all the choices and steps were carried on by the owner's budget. Fostering this bottom-up action as a reference, many others will be able to achieve better living conditions.

During the construction the interest toward the technique has increased sensitively among neighbours. While so far the local earth building techniques have been seen as outdated ways of building and most of the people were looking forward to raise funds to get a modern concrete block house, the more attractive look of rammed earth building seemed to invert this tendency.



1. Opoku speaking with the neighbors about the technique

2. Community participation on the building

3. Opoku's family and the volunteers in front of the new house

4. Luca and Sara setting up the formworks for the first rammed earth section



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Photo credit : Samanta Lua

1. Particular of the veranda's pillar, made by broken bucket and metal profile

2. Opoku and his family in their future home

3. Opoku's daughters next to the old kitchen



*10) Defend, promote and enable access to adequate and dignified habitat for all as a 'Fundamental Human Right'*

The purpose of the project was to establish a community process of improvement in living conditions by providing a low-cost, durable and adaptable alternative of dwelling unit, suitable for the local context.

We therefore supported the first dweller in the village who had the capacity to overstep the prejudices related to earth as a building material, encouraging the reproduction of the model.

The Ghanaian rural Areas such as Abetenim's one have to struggle for enhance their living conditions due to the lack of infrastructures and services. Therefore the development of a reproducible system with readily available materials on site and that do not need special tools can give a real chance to improve even to people living in the most disadvantaged areas. This method wish to provide a more sustainable and resilient way of cooperation, providing a technical support on the first steps, but generating an independent skilled working team able to reproduce and adapt the experimented system to many different conditions.

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