

SANDBAG HOUSE



SAVE NAIRA

BUILD WITH

ECOBREAMS



EcoBuildNigeria

Building with Nature

Ecobuild Nigeria Limited (ENL) is an eco-friendly construction firm and property developer in its start-up phase. The company exclusively represents Ecobuild Technologies SA, patent holders for the award-winning Ecobeam building system. ENL's license presently covers West African Region.

ENL's mission statement is: "To become the premier provider of affordable and eco-friendly housing solutions in Africa. We will constantly strive to bring dignity and affordability to the housing situation of the millions of Africans who are in desperate need of good quality homes."

Ecobuild's Vision Statement is as follows: "To help improve the quality of life of Africans by providing quality affordable and eco-friendly housing in their respective localities"





ECOBREAM SYSTEM

The Ecobeam Building Technology is a revolutionary yet simple and cost-saving approach to home construction using sandbags.

The Ecobeam building system is a patented, modified timber frame construction method which involves the use of two key materials:

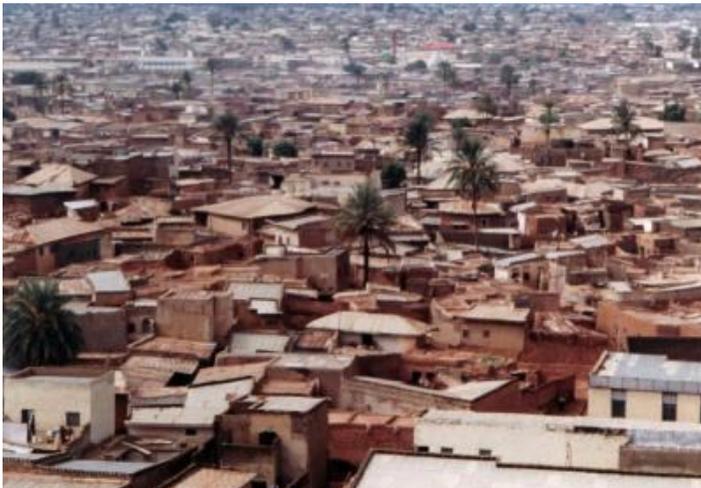
1. Ecobeams: a trademark lattice beam constructed with parallel chords of sawn timber and inclined web members formed from a continuous metal strip in zigzag configuration.
2. Ecobags: polyester bags filled with sand (hence sandbags) dry stacked to form a wall system.

The Ecobeams can be manufactured on or off site and are then set in place on site to form the framework for the Ecobags. The Ecobags are then carefully stacked between the beams to form the wall structure. The wall is then covered with a wire mesh and completed with sand – cement plaster or cladding boards externally as well as internally. However, other suitable finishes can also be used. While providing a high-quality yet low cost home for the customer, the Ecobeam system is very easy to use and very eco-friendly. Ecobeam is suitable for both bungalows as well as multi-storey buildings.



THE NIGERIAN HOUSING PROBLEM

Nigeria has an estimated population of about 140 million people and the Oxford Business Group estimates that about 14 - 16m units are required to fix Nigeria's housing deficit at an estimated cost of about \$305bn-339bn. The situation in the country is further worsened by a low per capita income, poor access to mortgage finance as well as the constantly rising cost of building materials, most notably the high cost of cement which is a major component of most conventional building methods. These problems have consistently made it an uphill task for the average Nigerian to get a foot on the property ladder. Although there are currently several other building technologies on the market today, none of them can offer all the advantages of the Ecobeam system nor can they match its cost effectiveness



ECOBELM SYSTEM: How It Works



1. Foundation



2. Wall Assembly



3. Placing of Ecobags



4. Plastering



5. Finished Ecobeam House



ECOBREAM ADVANTAGES

The Ecobeam Systems offers a number of advantages that can help alleviate some of these problems:

- Construction can take place at locations to which road access is not provided. This reduces the damage and congestion caused by heavy trucks which carry bricks and cement.
- No electricity is required at the construction site and only minimal amounts of water and cement are required.
- 1500 bags fit into the boot of a small car and weigh only a few kilograms. This is the equivalent of 3000 bricks over the same area in a cavity wall.
- The Ecobeams are light in weight and can be easily handled by one person in all phases of the construction.
- The only "wet" trade required is the plasterer. The plaster adheres easily to the sandbags and chicken wire that covers the walls. The Ecobags are made wet before the plastering process.
- The wet bags behind the plaster enable the plasterwork to "cure" instead of merely drying, as it does in standard construction. The end result is a very hard and reinforced cement finish.





- No bricks lie around the site before, during or after completion, thus eliminating "site-clearing", which is a major cost factor on any building site. Unused bags can be removed from the site overnight thereby reducing the incidence of theft.

- The “Ecobeam System” exhibits tremendous thermal stability. The occupants will be kept cool in summer and warm in winter. The system also has excellent sound absorbing properties which help to provide a measure of privacy in close quarter living.

- The “Ecobeam System” is much heavier than brick construction and is therefore wind resistant.

- The “Ecobeam System” resists water penetration due to the fact that the sand in the bags is a filter medium – any water penetrating the plaster will simply “filter” down to the damp-course and exit the wall to the outside.

- The “Ecobeam System” is fire resistant.

- Construction rate of the “Ecobeam System” is rapid.

- All members of the community can be involved, thereby creating a sense of ownership, belonging and contribution in the participants.

- The walls of the “Ecobeam System” are bullet-proof.





INDABA 10 X 10 HOUSE



AWARD AND INTERNATIONAL RECOGNITION

Ecobeam Technology is an internationally recognised and patented technology. It is currently being used successfully in several parts of the world including Mexico, Ukraine, Chile, Uruguay, Mozambique, Madagascar, French Guyana, India, Namibia, Seychelles, Zimbabwe, Himalayas, Cambodia and South Africa. 80% of the Ecobeam houses built in South Africa to date have been in the high end bracket.

In 2008, MMA Architects, a South African based firm, won \$100,000 for an international award (The Curry Stone Grand Design Prize) for their innovative building designed using the Ecobeam construction technology . The winning design was as a result of a brief for the Design Indaba 10x10 Low-Cost Housing Project to design a home for no more than R50,000 (about \$6250) in Cape Town, South Africa.

Ecobeam Technology has been extensively tested and meets all NHBRC building guidelines. It has successfully passed the following tests conducted by the South Africa Bureau of Standards:

- Structure and wind
- Rain Penetration
- Soft Body
- Hard Body
- Attachment of Fittings
- Fire Penetration Test



HOUSES BUILT USING ECOBEAM SYSTEM



COST COMPARISON IN NIGERIA

1 Bedroom (Substructure)									
Conventional					Ecobuild				
Activities	Unit	Qty	Rate	Amount	Activities	Unit	Qty	Rate	Amount
1 Preliminaries, Setting Out	1	Item	20,000.00	20,000.00	Preliminaries, Setting Out	1	Item	10,000.00	10,000.00
2 Excavations	7	cu.m	1,500.00	10,500.00	Excavations	4	cu.m	1,500.00	6,000.00
3 Blinding	2.7	cu.m	10,500.00	28,560.00	Structural Ecobags Filled with mix	462	bgs	235.00	107,775.00
4 Concrete in Foundation	3.6	cu.m	27,200.00	96,984.00	Laterite Filling to make levels	9	cu.m	2,000.00	18,000.00
5 Blockwall in foundation	11	sq.m	4,507.00	49,577.00	Light Concrete mix to sides of foundation bags	2.7	cu.m	10,500.00	28,560.00
6 Laterite Filling	12	cu.m	2,000.00	26,000.00	DPM	1	Item	10,000.00	10,000.00
7 Hardcore	42.5	sq.m	1,000.00	42,500.00	Hardcore with structural bags	527	bgs	150.00	79,050.00
8 DPM	42.5	sq.m		10,000.00	German Flooring	47.4	sq.m	800.00	37,920.00
9 German Flooring - Concrete	7.5	cu.m	27,200.00	204,000.00	Formwork to sides of floor	6	sq.m	850.00	5,100.00
10 Timber Formwork around German floor	10	sq.m	700.00	7,000.00					
Total Cost Using Conventional Method				495,121.00	Total Cost Using Ecobuild System				302,405.00

**COST SAVINGS - 38% Less than Conventional Building System.
The Savings continues till the building is completed**



Conclusion

The Ecobeam building system is tested, versatile and low cost. It is ideal for the low as well as the middle ends of the Nigerian Housing market and will undoubtedly help towards the democratisation of home ownership in Nigeria. The introduction of the Ecobeam system into the country has come at a very timely period when the rising cost of cement is a very topical issue and people are searching for a viable, reliable and low cost alternative to conventional building methods.

Welcome to the world of Ecobeam Technology!

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