

## Providing Homes For The Homeless – The Viable Alternative.

D. Herbstein\*

Keywords : Earth Brick - Appropriate technology - Housing.

Throughout developing countries in the world millions of people live in the most abject of circumstances, with little or no internationally acceptable living standards in respect of hygienic sewerage, drinkable water, adequate food or protection against the elements i.e. homes.

Three basic requirements for survival are HOMES (protection against the elements), WARMTH (clothing) and SUSTenance (food & water). This article aims to provide information on affordable, intermediate technology available to developing countries in respect of housing which offers the following benefits:

1. In situ and economically viable production of ecologically compatible and durable building blocks with which to build permanent, affordable homes for the inadequately housed masses of the world.
2. Conservation of energy and priceless timber resources which are currently being used for both building and fuel purposes. Malawi burns 65.000 tons of wood per annum just to bake homemade clay bricks. The on-going deforestation and desertification of Africa alone is resulting in less and less arable land being available each year on which to grow crops and feed an ever-increasing population.
3. Creation of jobs for the unskilled.
4. Creation of peri-urban and rural self-help schemes and skill training.

The oldest man-made building material in the world, dating back tenths of thousands of years, is the mud or adobe brick. It is estimated that 35/40% of the world's population still live in structures built either partly or entirely using mud bricks. The introduction in the mid-fifties of intermediate technology resulted in the addition of a small percentage of cement and hydraulic compression which turned the age-old mud brick into a viable, cost-effective and durable alternative to the more conventional – and more expensive – baked clay brick or cement breeze block.

Eco Brick Systems has pioneered the development of the Eco Brick machine which produces up to 1500 Ecoblocks per day, employing a team comprising an operator and 4 completely unskilled labourers. Each Ecoblock, measuring 290 x 145 x 120 mm, is completely waterproof, fireproof with excellent thermal qualities due to the inertness of the raw material i.e. earth!

The Eco Brick machine is completely self-contained (with its own on-board petrol engine) and, weighing less than 400 kgs, is easily transportable. TAKE THE FACTORY TO THE BUILDING SITE. This has obvious advantages as far as rural

communities are concerned where the transport costs of bulky building materials tend to be prohibitively high.

Ecoblocks are produced by mixing most cohesive, clay-based, sand, soil, silt or loam with 3-5% cement and a little water and compressing the mixture in the machine under 20 tonnes of hydraulic pressure for literally 2 to 3 seconds. The resultant densely compacted, durable block emerges from the machine with a smooth, plaster finish which obviates the need to either paint or plaster the wall, inside or out, to protect it against the elements. A simple, basic field test to establish the suitability of the raw material is to take a handful of moist (not wet) earth and squeeze it tightly; if, on opening your hand, the material remains balled up it is generally suitable.

Ecoblocks do not require baking or any further processing. They may be left out in the open for 4/5 days to cure whereafter building may commence; the curing (strengthening) process will continue for 28 days at which stage the Ecoblock will have achieved a compressive strength of up to 10 Mpa – the internationally accepted minimum for two-storeyed buildings is 2,4 Mpa (source CRATERre, France).

Eco Brick Systems, only one of some 200 manufacturers of similar cement-stabilised, pressed earth brick making-machines – both manually and power-driven, have recently developed a new and exciting machine, which is extremely competitively priced.

This MARK1V/WP machine offers a variety of benefits and advantages over other models, as it can produce the following:

- a. A solid, densely compacted, smooth sided block measuring 290 x 145 x 60 up to 120 mm with the 3rd dimension instantly variable by a quick and simple machine adjustment (this is the basic machine).  
With the addition of optional extra change parts, the following is possible:
- b. The same block but with two vertical holes for wiring/piping etc.
- c. The same block but with interlocking profiles at either end to facilitate the drystacking method of building with no mortar between the blocks.
- d. The same block but with both holes and interlocking profile.

The machine is designed and sturdily built for use in rural areas with minimal maintenance and replaceable – every ±3 to 4 years – wear plates (wherever the soil comes into contact with the machine) to extend the working life of the basic machine.

\* Eco Brick Systems, 85 Forest Rd., Bramley 2090. South Africa.

Received and accepted for publication on 27.05.94.

## Conclusion

With the growing need for acceptable, affordable housing within developing countries and the limited availability of international aid funds from the industrialised Western nations, the age of self-help is upon us.

What better way for developing countries to save the countryside from de-forestation and soil erosion than by re-introducing an eons-old, upgraded technology to assist their ho-

meless to selfhelp themselves to build their own permanent homes and reduce their dependence on scarce timber and fuel resources – soil is God-given and usually freely obtainable.

CRATerre-EAG, Centre Simone Signoret, BP 53, F – 38090 Villefontaine. France – the International Advisory Centre for Earth Construction, dedicated to the promotion of earth as a building material, is the world leader in all facets of different earth construction technologies and may be consulted for further information.

D. Herbstein: Managing Director.

## ADDENDUM ET CORRIGENDUM

“La voie foncière et administrative en appui à la voie écologique et agricole pour une gestion décentralisée des ressources naturelles dans le programme Après-Barrages au Sénégal” par P.P. Vincke & P.A.Sow; Tropicultura 1994, Vol.12 N°2 pp.50-54

Prière de remplacer la dernière phrase reprise page 53, 1<sup>e</sup> colonne, 4<sup>e</sup> paragraphe par :

“Par ailleurs, elle a impulsé l’élaboration des termes **de références (18) d’un Plan Directeur de développement intégré** de la Zone Sylvo-Pastorale (PDZSP) qui propose un aménagement de cette zone selon les recommandations du PDRG, et orienté vers la gestion des terroirs d’autres plans comme le Plan d’Action Forestier du Sénégal (10) qui intègre le PDRG et le PDZSP.”

## Quelques titres en attente de publication

### Some accepted titles awaiting publication

### Enkele aanvaarde titels die op publikatie wachte wachten

### Algunos títulos en espera publicación

Tests au champ de la résistance à la pyriculariose du riz au Zaïre.

Variation géographique de *Commelina benghalensis* L au Bénin.

Excrétion d’oeufs de strongles gastro-intestinaux et relation avec la quantité de tiques chez les bovins gambiens N’damas et zébus Gobra.

Lutte contre la cochenille du manioc *Phenacoccus manihoti* Matile-Ferrero et l’acarien vert *Mononychellus tanajoa* Bondar au Zaïre : Bilan des recherches.

Effet comparé des poudres de *Nicotiana tabacum* L., *Cymbopogon citratus* (D.C.) STAPP et de l’huile de *Ricinus communis* L. sur la conservation des graines de *Vigna unguiculata* (L) WALP.

L’élevage traditionnel des volailles au Cameroun

Le criquet de Mato Grosso : l’agriculture est-elle responsable ?

Le changement technologique dans l’exploitation agricole des régions d’altitude au Burundi (Bututsi).

Eveil des femmes paysannes pour le développement communautaire dans la région de Lwiro (Sud-Kivu, Zaïre)

Diversité et importance des chenilles dans l’alimentation des populations du Zaïre.

Evaluation pastorale des savanes du ranch de Kolo - Bas-Zaïre.