



Technology Transfer for Green Brick Making From India to Malawi  
Opportunities and Processes

**THE PROBLEM**

In Malawi, the demand for bricks is high, placing high demands on firewood.

Around 20 Metric Tonnes (MT) wood is needed to fire 40,000 bricks placing forests under unsustainable pressure.

An estimated 1.7 billion units of burnt clay bricks are needed annually in Malawi for walling alone, at the expense of some 850,000 MT of wood. These bricks are not of uniform quality and require high volumes of mortar in construction



A firewood-based conventional brick kiln

**TECHNOLOGY OPTIONS AND ENTERPRISE DEVELOPMENT**

Vertical Shaft Brick Kiln (VSBK) methods used in India produce good quality and uniform bricks without the use of firewood.

**Adoption of VSBK Technology would thus result in savings of 850,000 - 1,000,000 MT of wood per year in Malawi.**

**OPPORTUNITIES**

- Rising housing demand.
- Market assessment indicates a requirement of at least 1,000 VSBKs to meet urban demand alone.
- The government of Malawi is interested in reducing deforestation.
- Business opportunity for entrepreneurs to meet demand and provide quality bricks, with reduced pressure on forests.
- Growth of small and medium enterprises.

**FINANCIALS**

- Capital investment requirement: Between MWK 8.5-15 million (or GBP 12,642 – 22,312) depending on number of shafts.
- Payback period: 2-3 years, considering 1 year as stabilisation, training period.

*An entrepreneur can start with a single-shaft VSBK and add shafts as his business grows. The flexibility of the VSBK can meet any production capacity.*

*“Malawi may run out of its forests within 30 years unless the pressure on forests is minimised. The need to find an appropriate and affordable technology is urgent.”*



VSBK Bricks

*Vertical Shaft Brick Kiln technology (VSBK) is an energy efficient brick production system that does not require firewood. It produces consistent quality bricks with higher returns than clamp brick production. Greenhouse gas emissions are less, making it an obvious choice for the carbon market. Being versatile, VSBK can be adapted to any scale of production.*



Vertical Shaft Brick Kiln (VSBK)

VSBK technology is suitable for small to medium scales of brick manufacturing. It matches the capacity expectations of most entrepreneurs and is modular.

## IMPACT POTENTIAL

### Environmental Impacts

- Annual saving of fuel wood: 850,000 tonnes.
- Annual reduction in CO2 emissions: 1,500,000 tonnes.
- Reduction and saving in embodied energy.

### Economic Impacts

- Creation of more than 1,000 small to medium scale enterprises.
- Improved quality of housing and around 40 per cent cost saving from bricks and mortar alone.

### Social Impacts

- Poverty reduction through job creation.
- Reduced exposure to smoke and exhaust gases: Improved working conditions for kiln workers.

## WAY FORWARD

- Policy environment to support enterprise development and incentivise VSBK bricks use.
- Piloting, capacity support to first set of entrepreneurs.
- Support transfer of skills and testing of technology through piloting and strengthening local capacities.

## MAKING A BEGINNING

*The first VSBK kiln was inaugurated on January 26, 2015 in the presence of government officials from Malawi, Germany, UK and India.*

*The 120 participants included representatives from consumers, industry, waste generators and policy makers. The women federation of contractors from the housing company expressed keen interest in purchasing quality bricks from EcoBrick Ltd who was the prime investor for the introductory VSBK.*

*There is great interest in replicating this technology within Malawi and in neighboring countries. Addressing an awareness workshop organised on February 27, 2015, Mr Bright Musaka, S.C, the Honourable Minister of Land, Housing and Urban Development stated he was convinced that the technology could address deforestation, provide quality housing and generate employment, especially of women, and offered all support.*

## TECHNOLOGY TRANSFER AND SCALE UP FORMULA

- Partner identification for technology transfer.
- Market research to assess demand, policy and practice environment and returns on investment.
- Identification of suitable entrepreneurs.
- Setting up raw material and marketing supply chains.
- Technology transfer through setting up pilot kiln.
- Training and capacity for successful operations.
- Linkages to government and training institutes.
- Technology dissemination through visits and workshops

## IMPLEMENTATION PARTNERS



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## AWARENESS WORKSHOP HIGHLIGHTS

- Introducing the VSBK pilot to interested stakeholders.
- Malawi government's interest in alternate building material technology driven largely by increasing deforestation to meet housing demand.
- Introduction of scope for other eco-concrete building materials relevant for Malawi that had positive economic and environmental implications
- Site tour, where many participants expressed keen interest in knowing more about the operational aspects of the VSBK.

**The minister expressed interest in replicating the technology in government housing to mark a beginning towards change. He urged the setting up of such kilns across the country.**

KPP is a South-South cooperation programme promoting knowledge sharing in the areas of Food Security, Resource Scarcity and Climate Change; Health and Disease Control; Trade and Investment; and Women and Girls. KPP is funded by the Government of UK's Department for International Development (DFID) and managed by a consortium led by IPE Global Private Limited under its Knowledge Initiative. The main objective of KPP is 'Gathering and uptake of evidence on issues central to India's national development that have potential for replication in LICs and impact on global poverty'.

