



Vertical Shaft Brick Kiln (VSBK) Project

By piloting and disseminating an energy efficient brick production technology using the vertical shaft brick kiln technology, CO₂ emissions can be reduced by more than 50% or 100 000 tons per year in South Africa. The Swiss Agency for Development and Cooperation (SDC) is bringing this technology to South Africa from India and Nepal, where the SDC first launched the Vertical Shaft Brick Kiln Project.



Background and Challenges

South Africa has a very energy intensive economy which leads to high per capita greenhouse gas (GHG) emissions. The construction industry is responsible for 23% of the country's GHG emissions. Clay bricks are still predominantly fired in energy inefficient and highly polluting clamp kilns. Facing new environmental regulations, increasing coal costs and shrinking profits, South African brick entrepreneurs are actively looking for energy efficient firing methods. In comparison to the clamp kilns, the VSBK technology is an energy efficient way of firing clay bricks and is particularly suited to the needs of developing countries.

The Vertical Shaft Brick Kiln (VSBK) Project is part of the SDC Climate Change Mitigation Programme in South Africa. The programme focuses on energy efficiency in the building sector. The VSBK, an energy efficient brick oven which originated in China, is being adapted and improved with support from the SDC; the Agency piloted the technology in India and Nepal. The VSBK technology uses hot exhaust gasses for the gradual preheating of the unfired bricks in a continuous process, thus reducing energy consumption and CO₂ emissions by up to 50% compared to the more commonly used clamp kilns. During the preparation phase of the project, an initial group of five clay brick producers were identified to adopt the VSBK technology.

Project Goal

The main objective of the VSBK project is to reduce CO₂ emissions in the production of clay bricks while improving working conditions and building institutional relations. The project focuses on establishing local ownership, facilitating South-South know-how and technology transfer and regional outreach. Knowledge transfer and capacity building are the main focus for anchoring the VSBK technology within the brick sector's existing supply structures in order to make the rollout a profitable business for the producers and, therefore, increase chances of sustainability.

Results to Date

- The SDC undertook a feasibility study in 2009 which entailed visits by the SDC's technical teams from India and Nepal - where the VSBK technology is already being used - to South Africa and vice versa; the teams assessed the opportunities for transferring the technology to South Africa and assisted in the design of the kilns.



- Six pilot shafts have been constructed in Langkloof Bricks, Port Elizabeth, and firing is ongoing in the shafts. An inaugural event of this first VSBK took place in Langkloof on 27 September 2011; representatives of the brick-industry, national and provincial government and financing institutes were present.
- The Clean Development Mechanism (CDM) Project component is being developed by CDM Africa.

Activities and Expected Results

The expected impact of the project is to mitigate climate change and environmental degradation through reduced emission of GHG in the construction sector. The project has three outcomes:

Caring Production: Locally adapted VSBK technologies are anchored in the industry as a competitive and viable alternative to current energy inefficient South African brick-firing methods;

Institutional and Legal Environment: A favourable institutional and legal environment is created in South Africa for the dissemination of VSBK technology; and

Dissemination Services: A commercial VSBK service supply chain is set up in South Africa.

It is estimated that over the next five to ten years up to 80 enterprises will adopt this technology in South Africa. In the first three-year phase, the aim is to construct 100 shafts with an annual production capacity of more than 180 million bricks. This will reduce the emission of greenhouse gases by 84 000 tons of CO₂ per year. Also, the project has a Clean Development Mechanism (CDM) component which provides an opportunity for entrepreneurs to improve the financial feasibility of the project.

Funding

CHF 2.3 million (approx. ZAR 17million)

Time Frame

2009 to 2013

Partners and Alliances

Swisscontact / SKAT
Department of Environmental Affairs, Department of Minerals, Department of Energy
Banks
The Clay Brick Association
The Private Sector

www.swisscontact.co.za