

VSBK Technology

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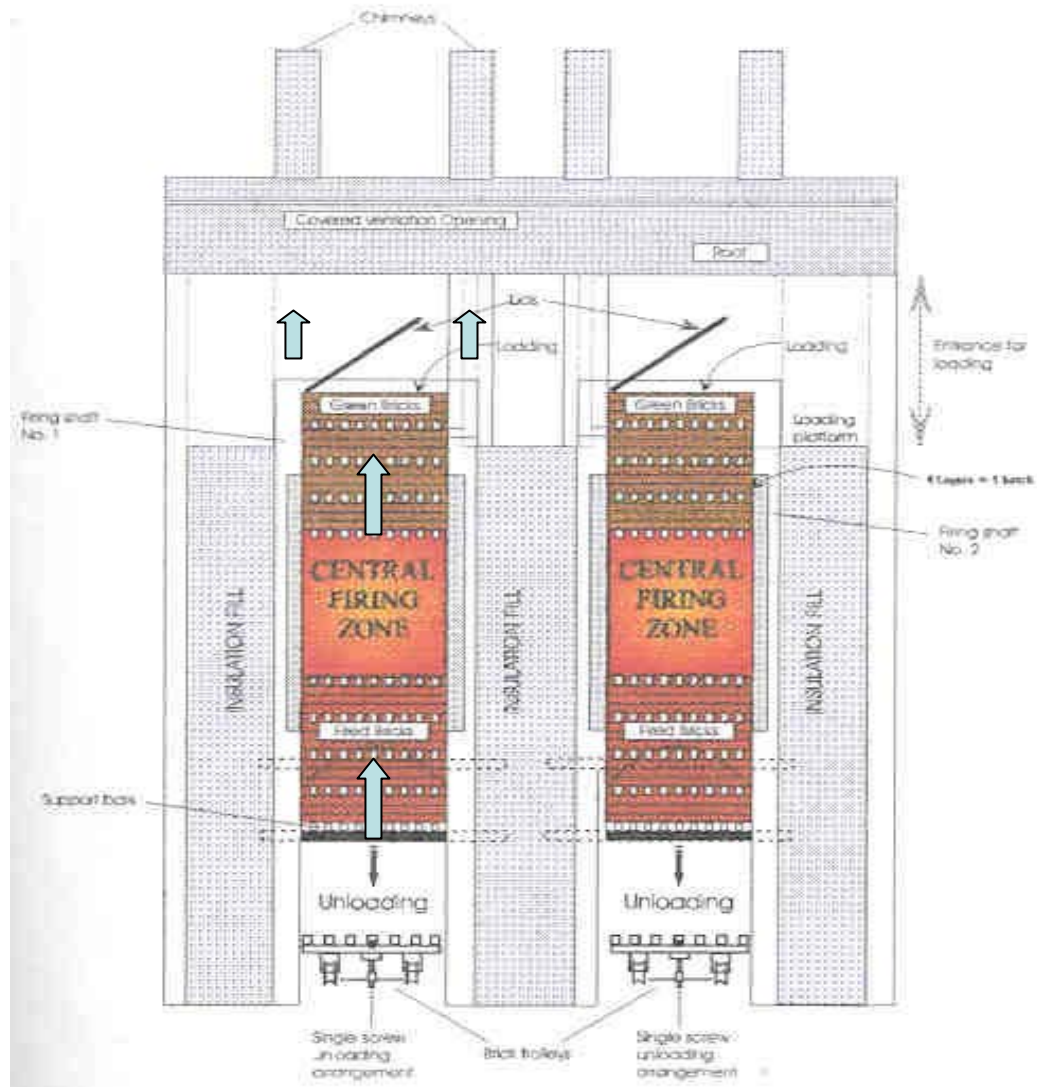
Director's Forum, Nam Dinh, Vietnam, August 2007

Vietnam Sustainable Brick Project

Presentation Outline

- Introducing VSBK.
- Why VSBK is the most energy-efficient brick kiln ?
- Improvements in VSBK since its introduction in Vietnam in 2001.
- Conclusions.

VSBK- Working Principle



VSBK- Operation

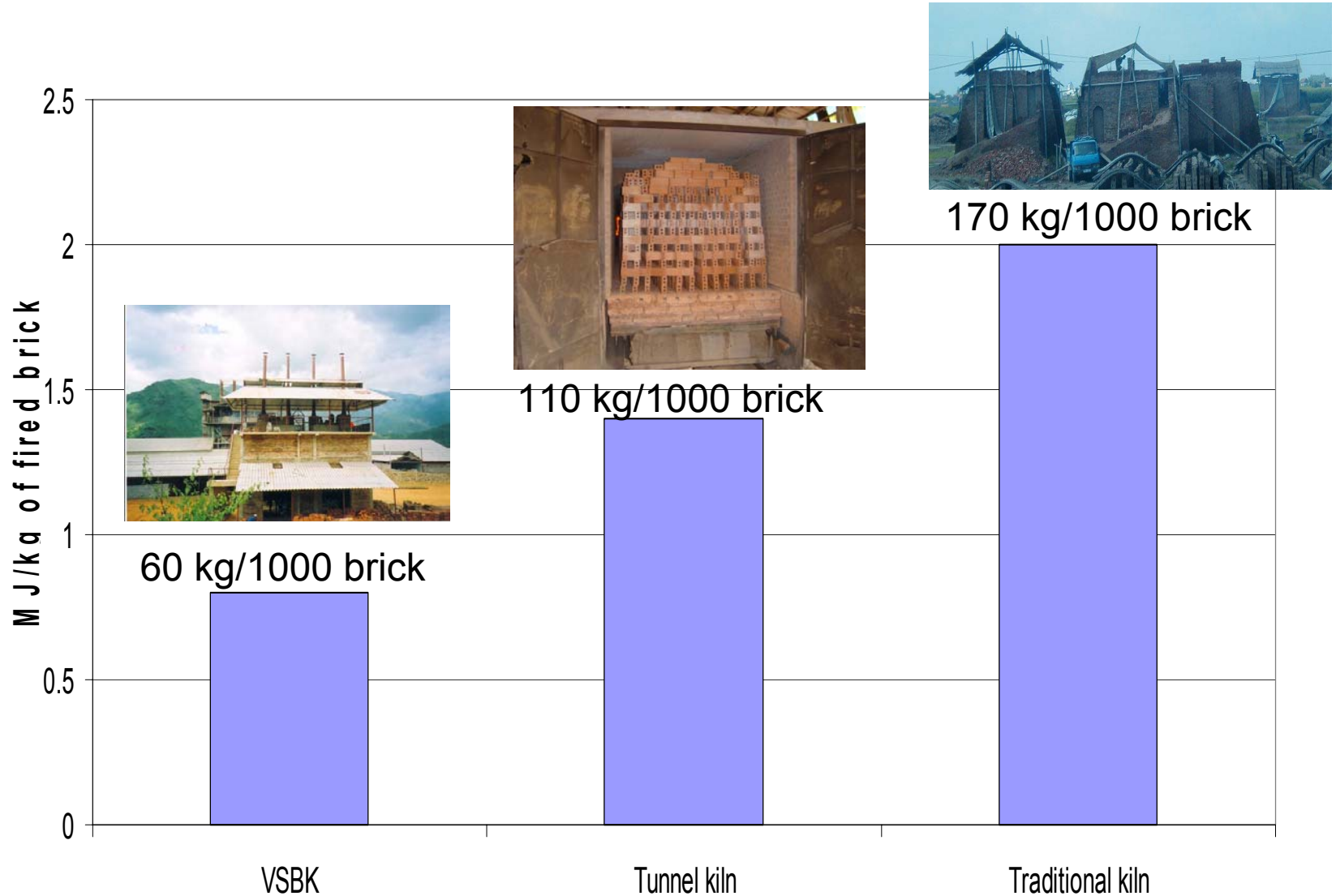


Unloading Bricks

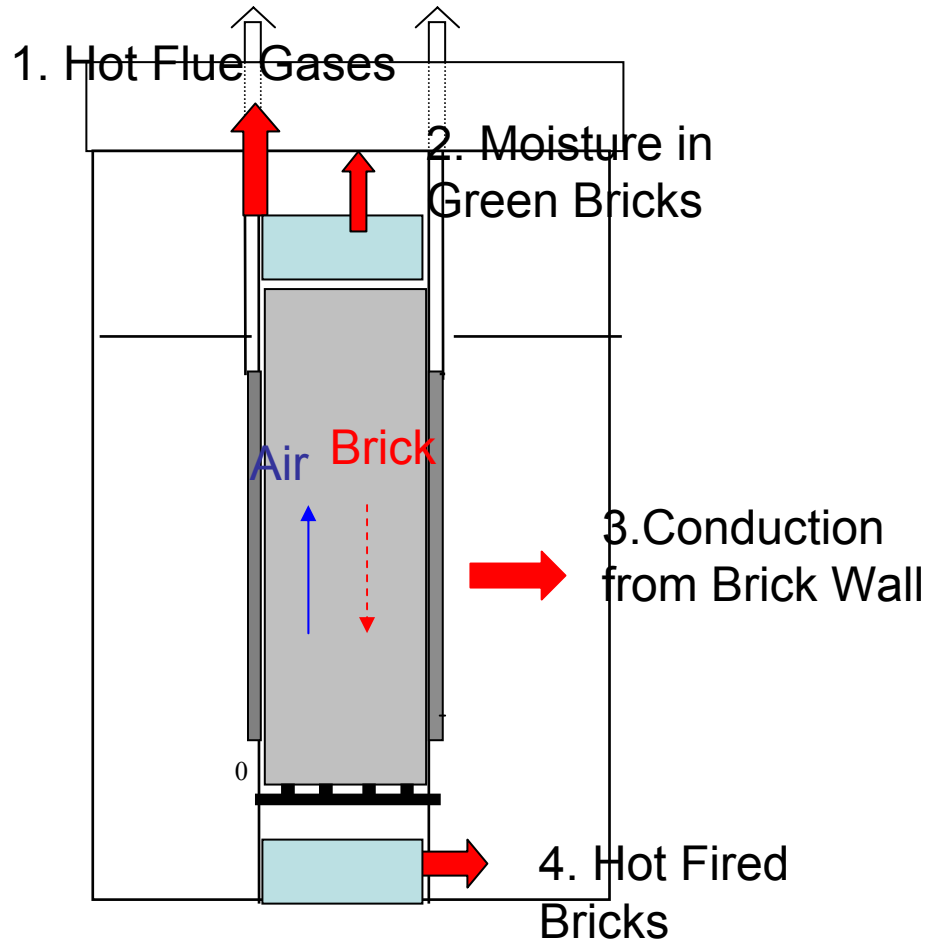


Loading of bricks and Coal feeding

VSBK: Minimum Coal Consumption

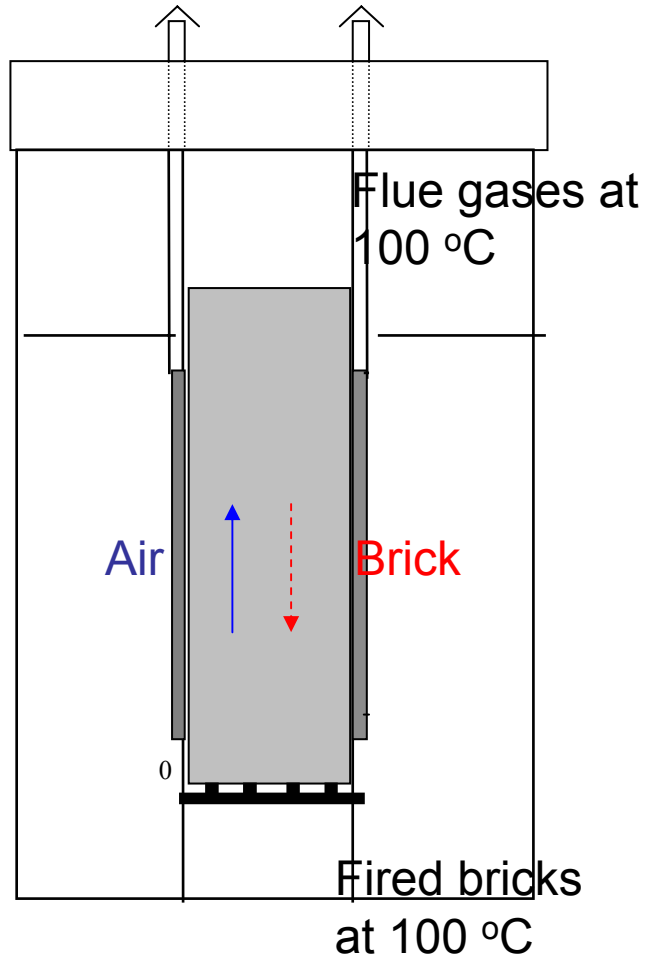


Why VSBK is More Efficient ?

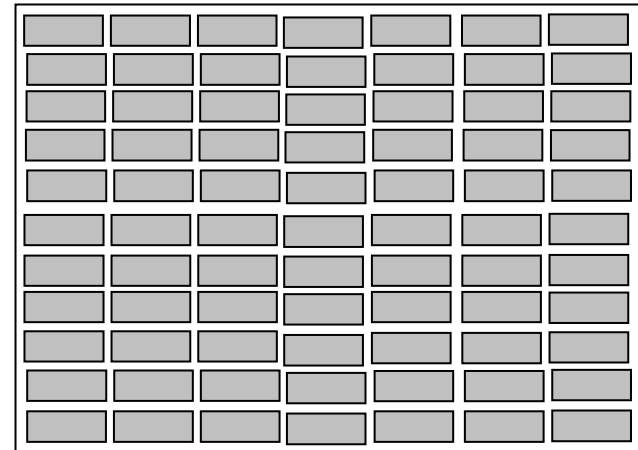


Main Heat Losses
in a Brick Kiln

Why VSBK is More Efficient ?



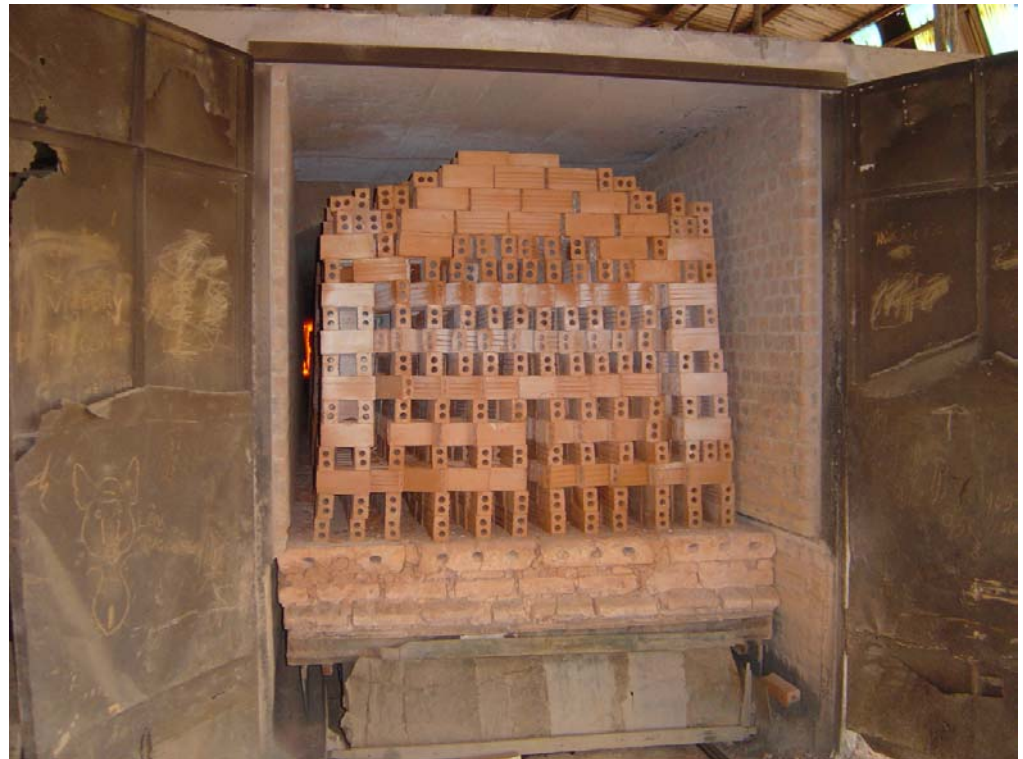
1. Efficient heat transfer between bricks and air



Why VSBK is More Efficient ?

2. No kiln car

In tunnel kilns, 15-20 % of the energy is lost in the kiln car coming out of the tunnel kiln



Why VSBK is More Efficient ?

3. Kiln is well insulated on all the sides

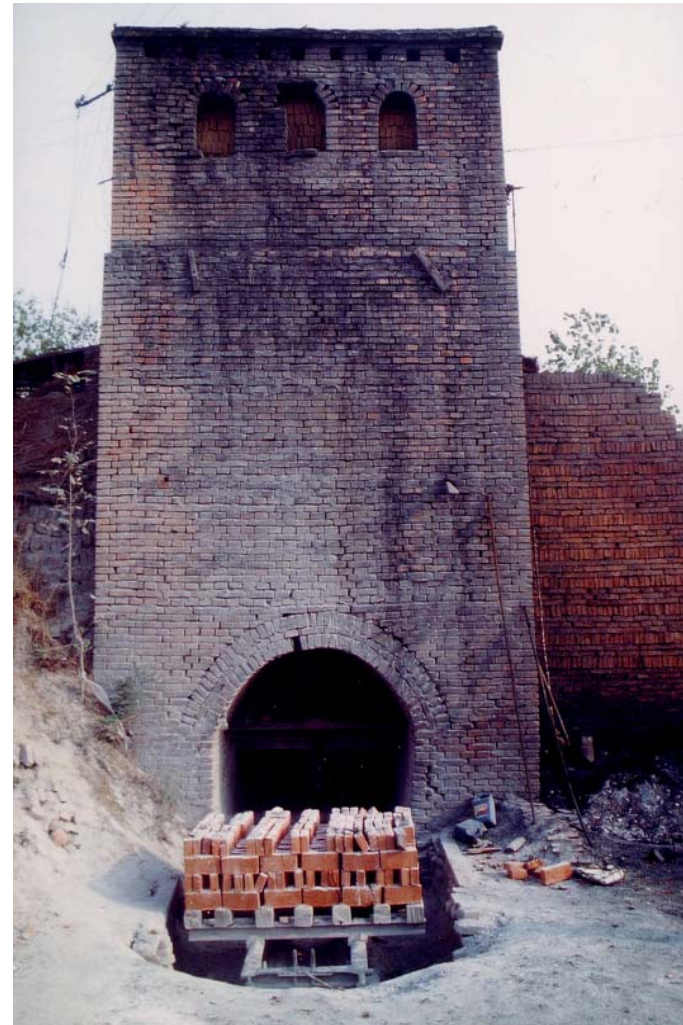


Why VSBK is More Efficient ?

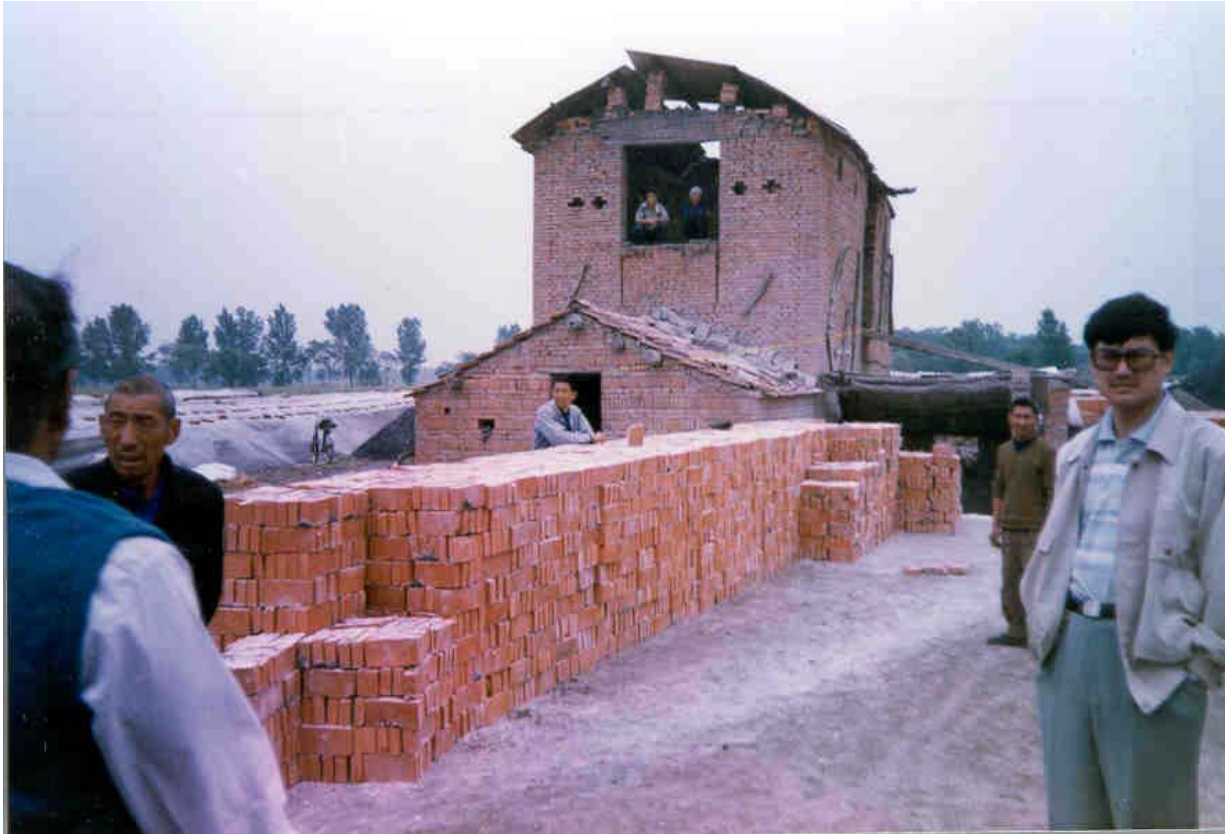
4. No air leakages; optimum amount of air

VSBK origin in China

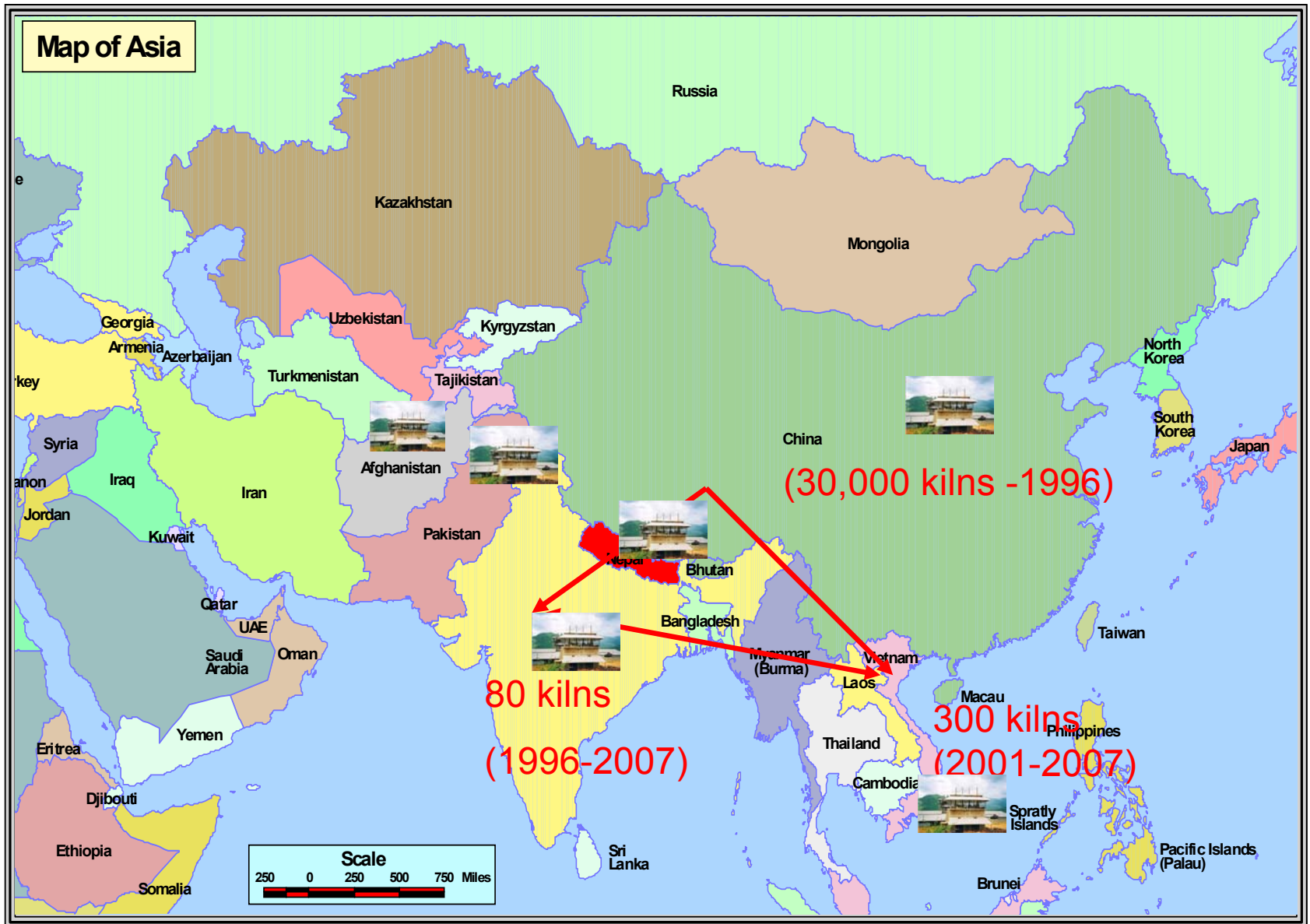
- 1996 (30,000 kilns)
- Popular in rural areas
- No chimneys; environment performance very poor.



VSBKs in China



VSBK Spread in Asia



Improved VSBKs in Vietnam



2001

First VSBK under UNDP project, Xuan Quan commune, Hanoi



2007

Model VSBK with technical assistance from VSBP, Vu Ban, Nam Dinh

Improved VSBKs in Vietnam: Clean Work Environment

- Taller and bigger Chimneys
- Two-layer flue ducts
- Openings in the roof and the walls of the top working platform.
- Use of 90-100% internal fuel



Clean work environment



Improvements in VSBK: Firing of Hollow Bricks

- Vietnam is the first country to fire a variety of hollow bricks.
- Hollow bricks are better as they save clay, energy and produce bricks with better insulation properties



Improved VSBKs in Vietnam: Improvements in Construction

- Factory made refractory flue ducts.
- Holes for filling-up the insulation



Factory made refractory flue ducts



Holes for filling-up the insulation

Improved VSBKs in Vietnam: Mechanization of VSBK



Winch to pull trolley



Hydraulic system for unloading



Winch for lifting

Conclusions

- Vietnam today has best VSBKs in the world.
- Since its introduction in 2001, VSBK has emerged as an attractive option for small/medium scale brick production: 1- 6 million bricks/year.
- It is the most energy efficient kiln with good environment performance.
- It can be used for firing various types of hollow bricks
- VSBP has been working to develop sustainable and profitable VSBK business models.

Thank You !!

Xin cảm ơn!!