

## VSBK/CESEF Technology Transfer Programme Clean Building Technologies for Nepal



## Introduction



# Brick Kilns in Nepal



Second largest polluter



Workers most affected



## Economics of Brick Kilns in Nepal

- **120 Brick Kilns in the Kathmandu Valley**



- **Annual Brick Production ~ 1.1 Billion**
- **Annual Turnover ~ 51 Million \$**
- **65 thousand tons of coal consumed annually**
- **Energy shares 35 % in the total brick production cost**

## Brick Making Technology



*Coal Consumption: 14 tones per  
100'000 bricks*

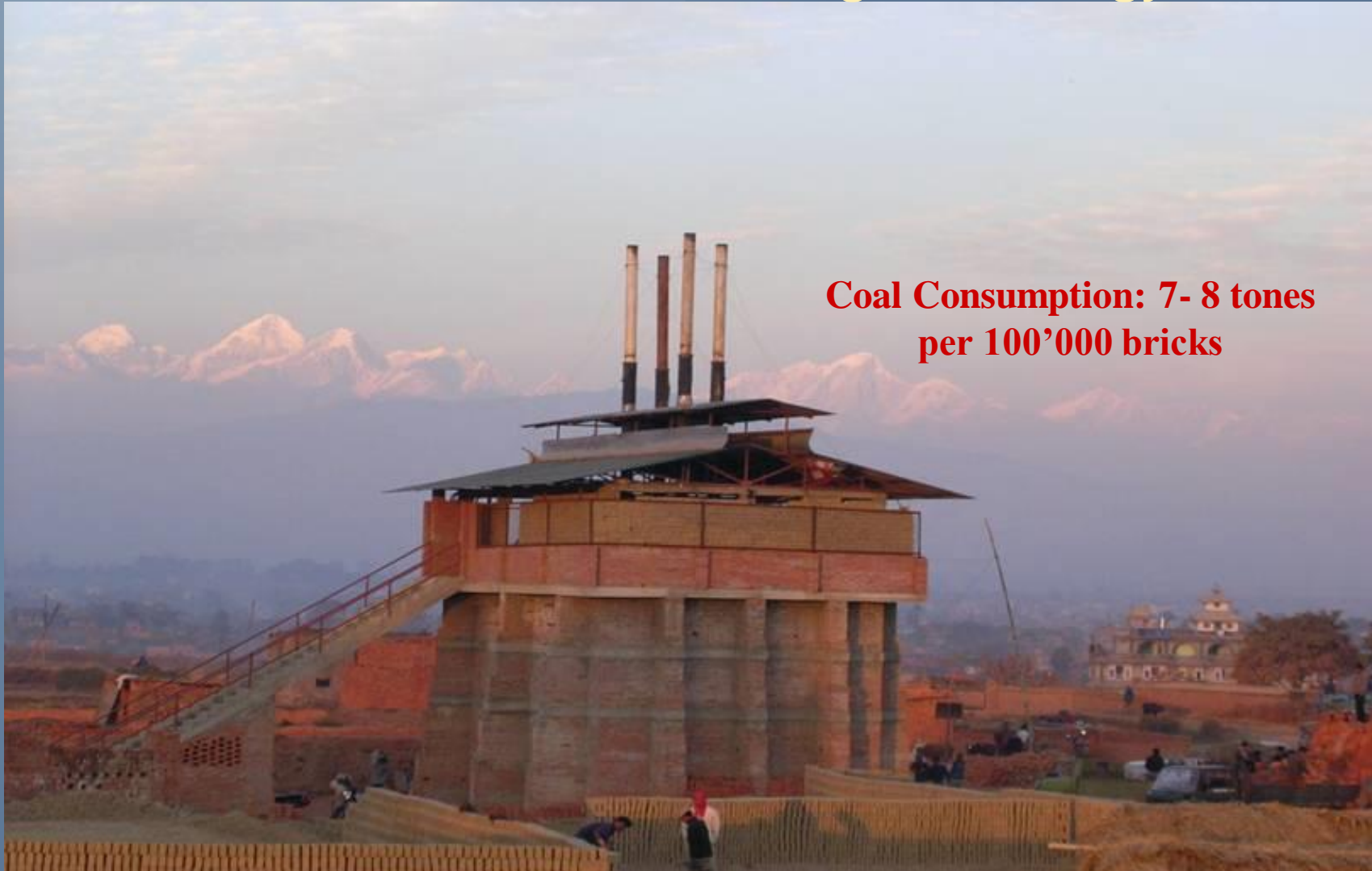


*9 tones Coal & 180 KWH  
Electricity Consumption: /  
100'000 bricks*



*Coal Consumption: 10 tones per  
100'000 bricks*

## Brick Making Technology : VSBK



**Coal Consumption: 7- 8 tones  
per 100'000 bricks**

**VSBK/CESEF Programme**



**Technology shift –  
vehicle to initiate change in  
environment and social  
issues in construction sector**

## Programme Goal

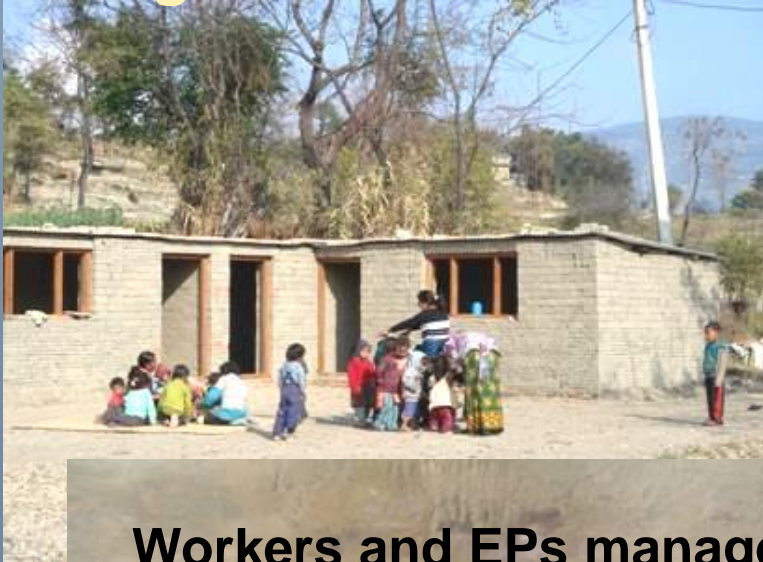
**Contribute to reduce emission of pollutants and Green House Gas and pollution in the construction sector to mitigate global warming, health and environmental degradation**



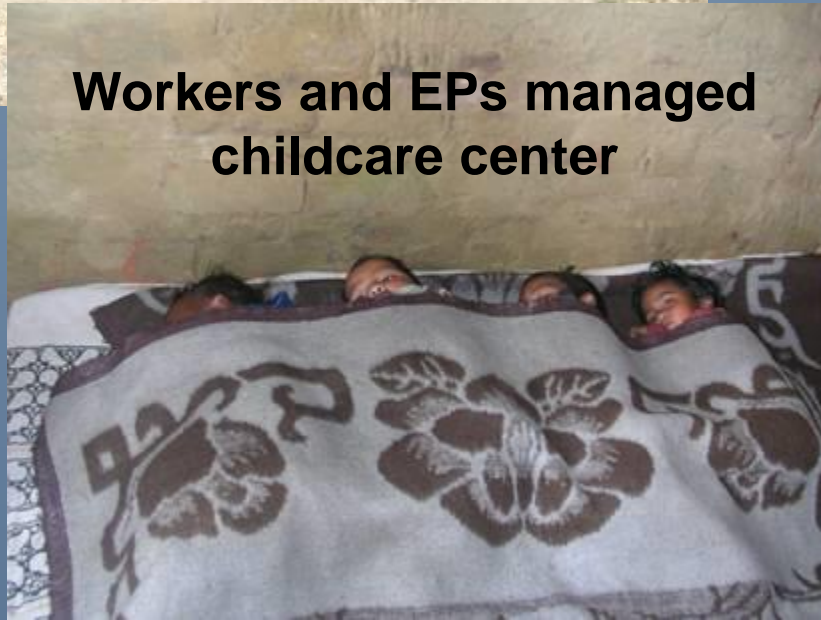
## Technical activities



## Living Conditions



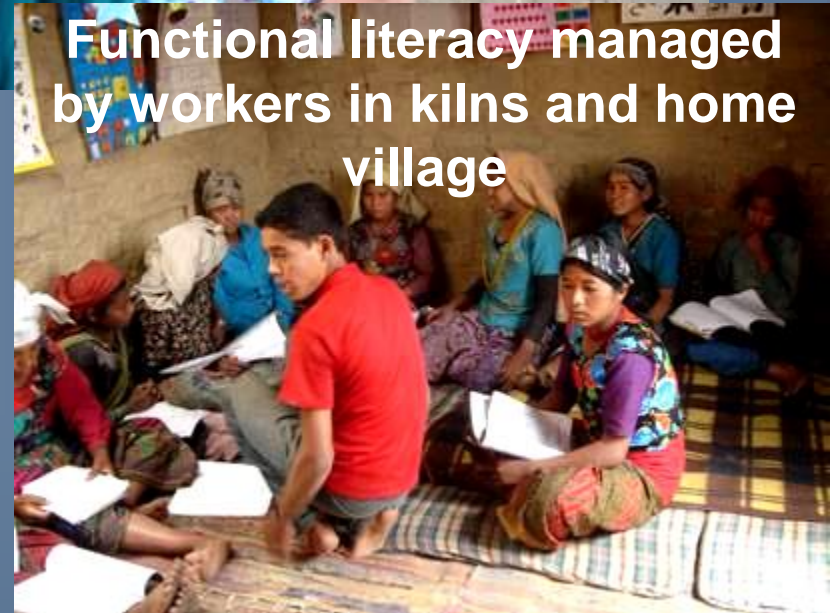
**Workers and EPs managed childcare center**



## Social activities



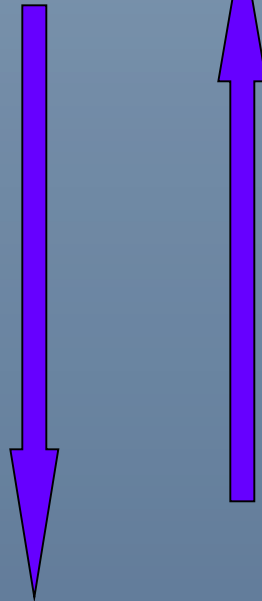
**Functional literacy managed by workers in kilns and home village**



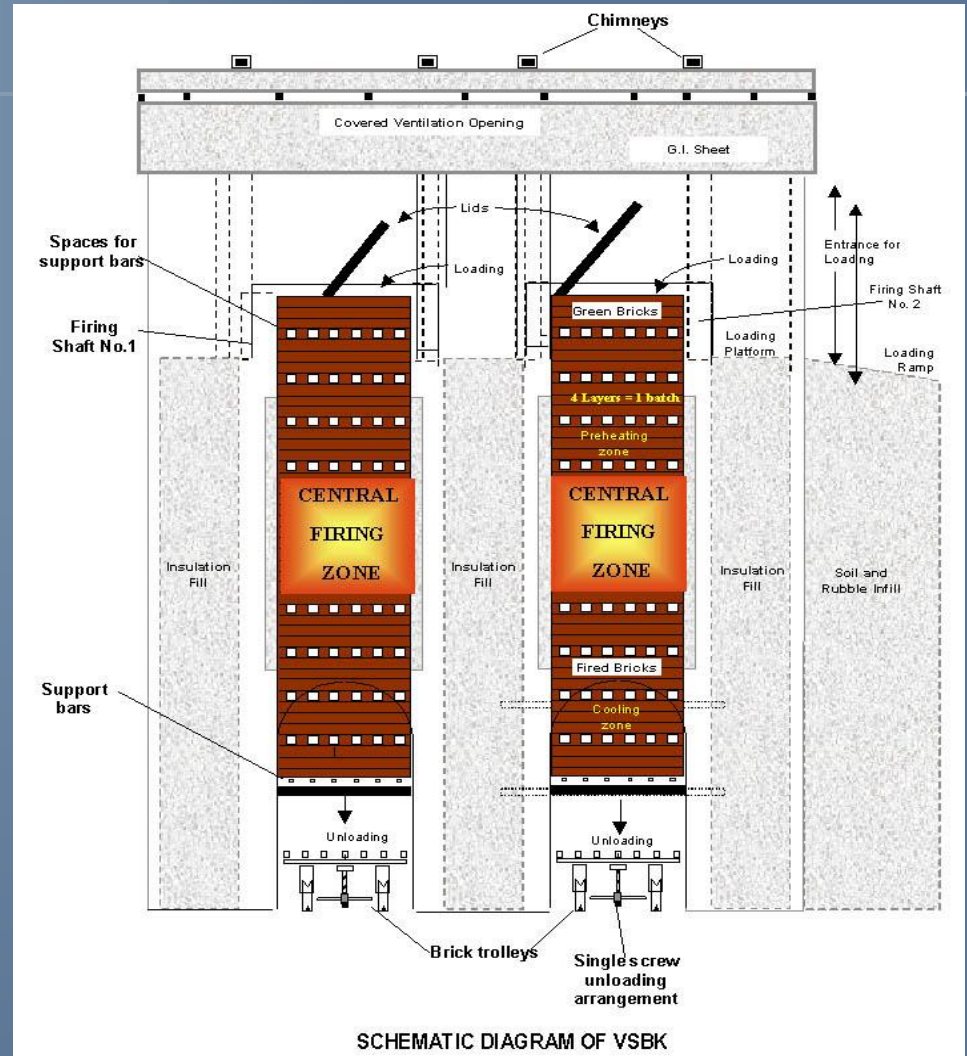
VSBK technology

What happens inside the Shaft

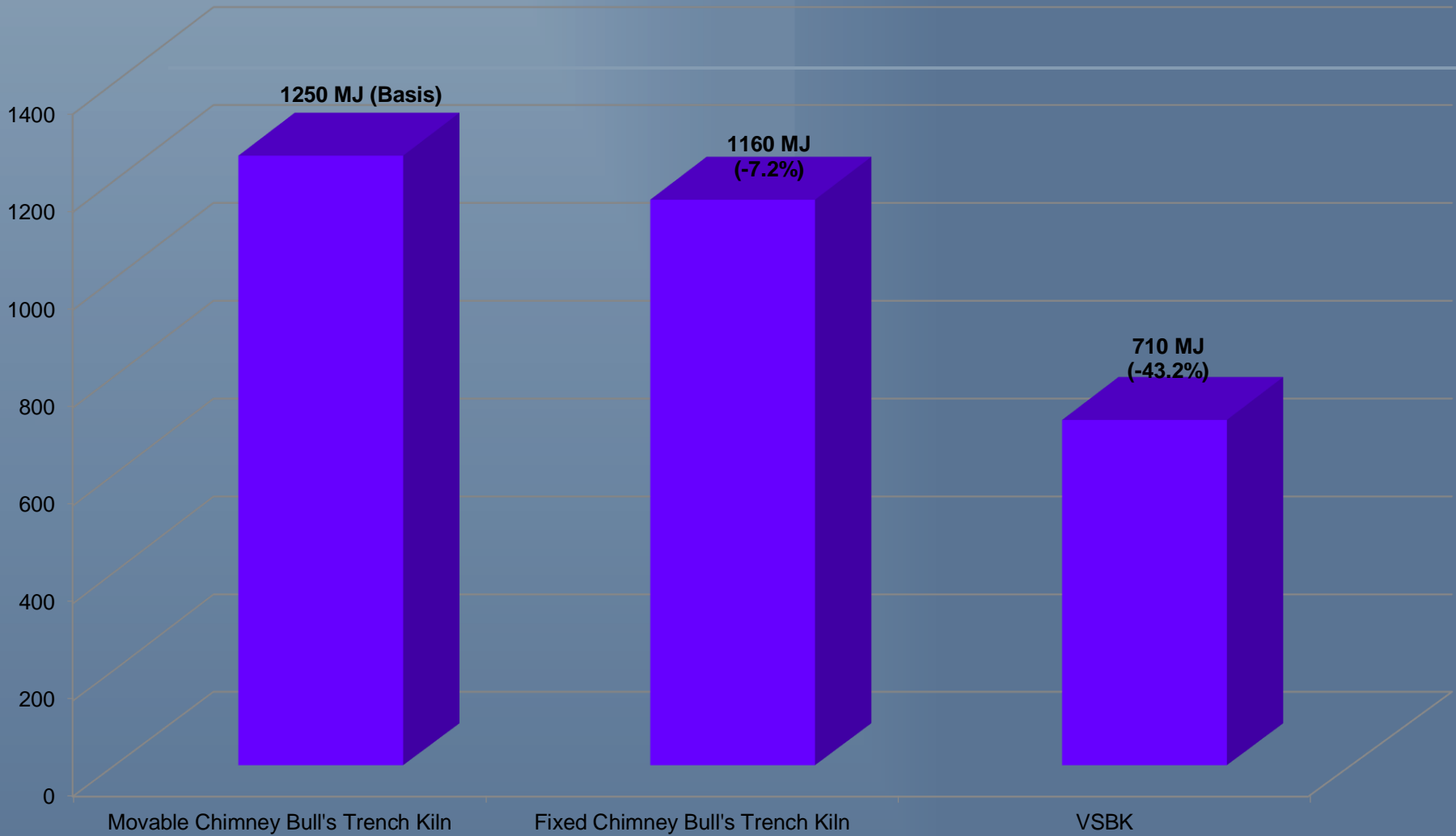
Air Moves Up



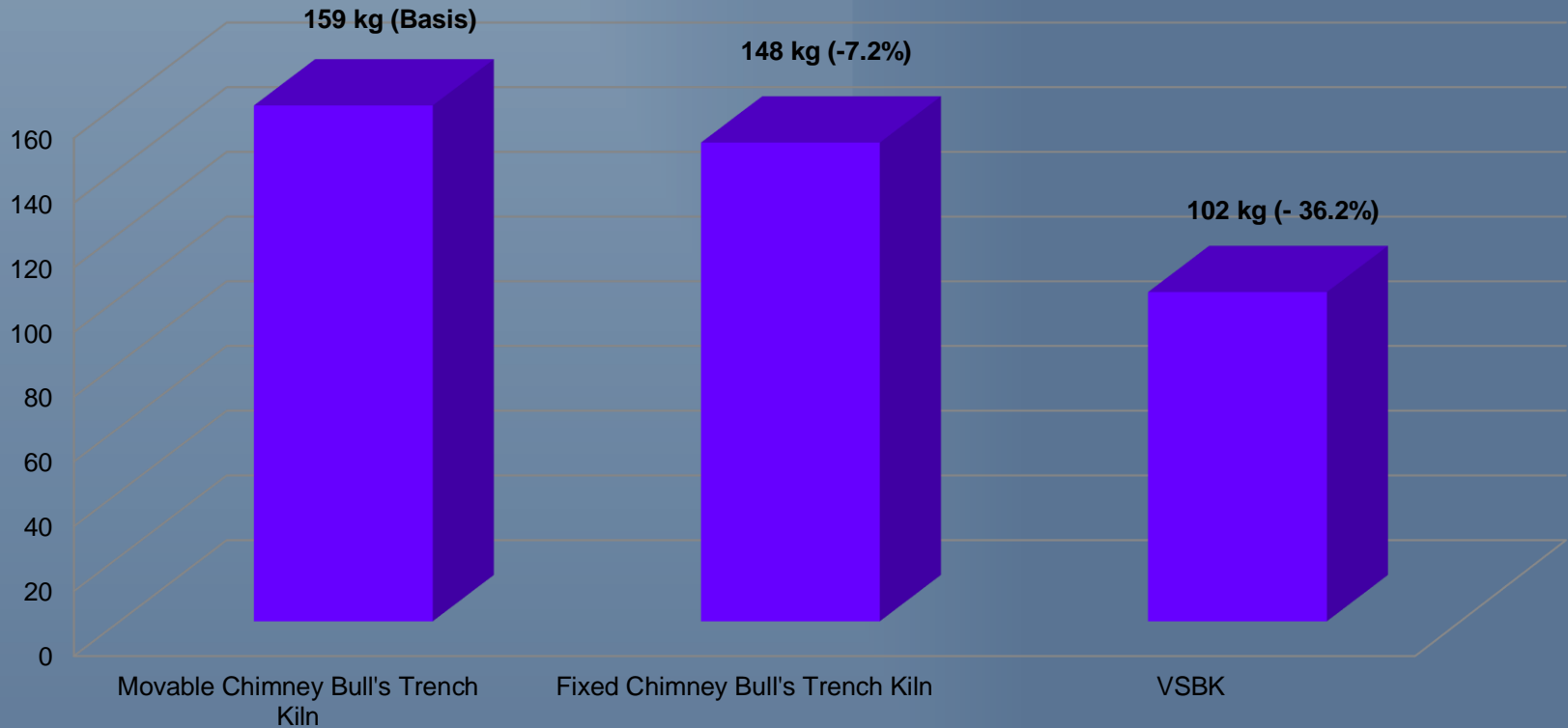
Bricks Moves Down



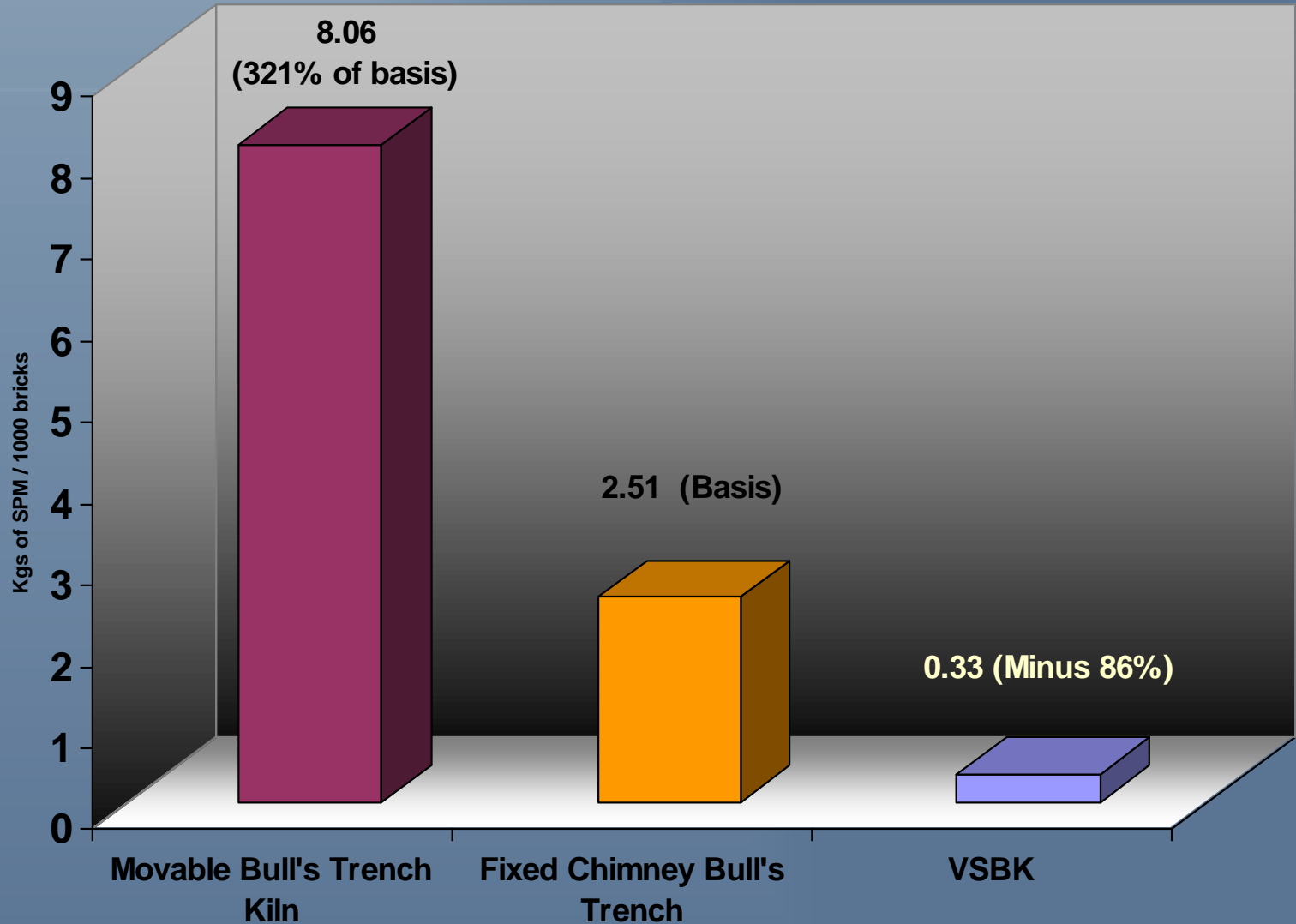
## Energy consumption in MJ / 1000 Bricks



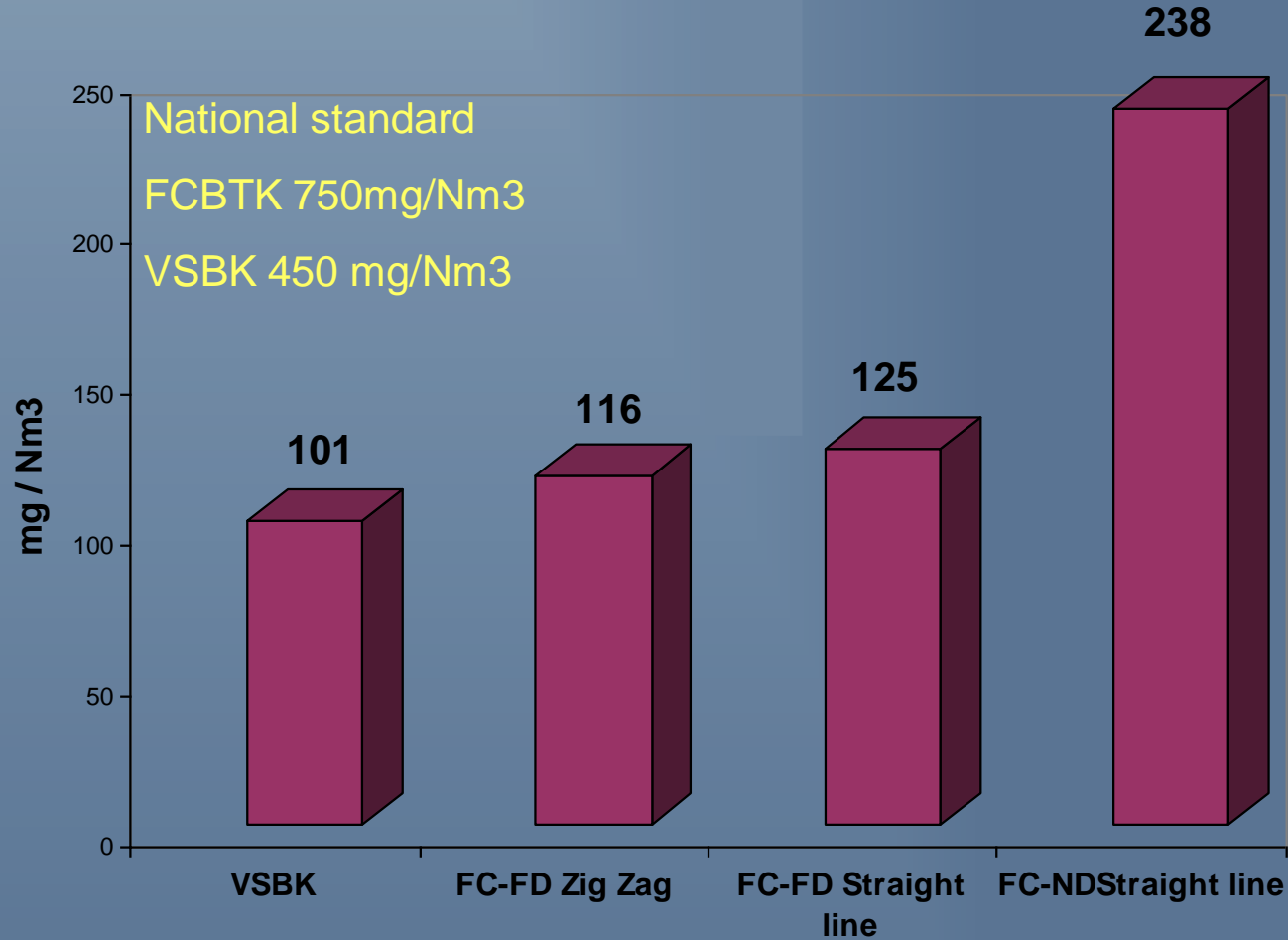
## CO2 Emission in kg / 1000 Bricks



# Environmental Performance: SPM in Kg per 1000 bricks



SPM Emission in mg/Nm<sup>3</sup>



# Achievements in CESEF



**CONCRETE BLOCK**



**RAT-TRAP BOND**

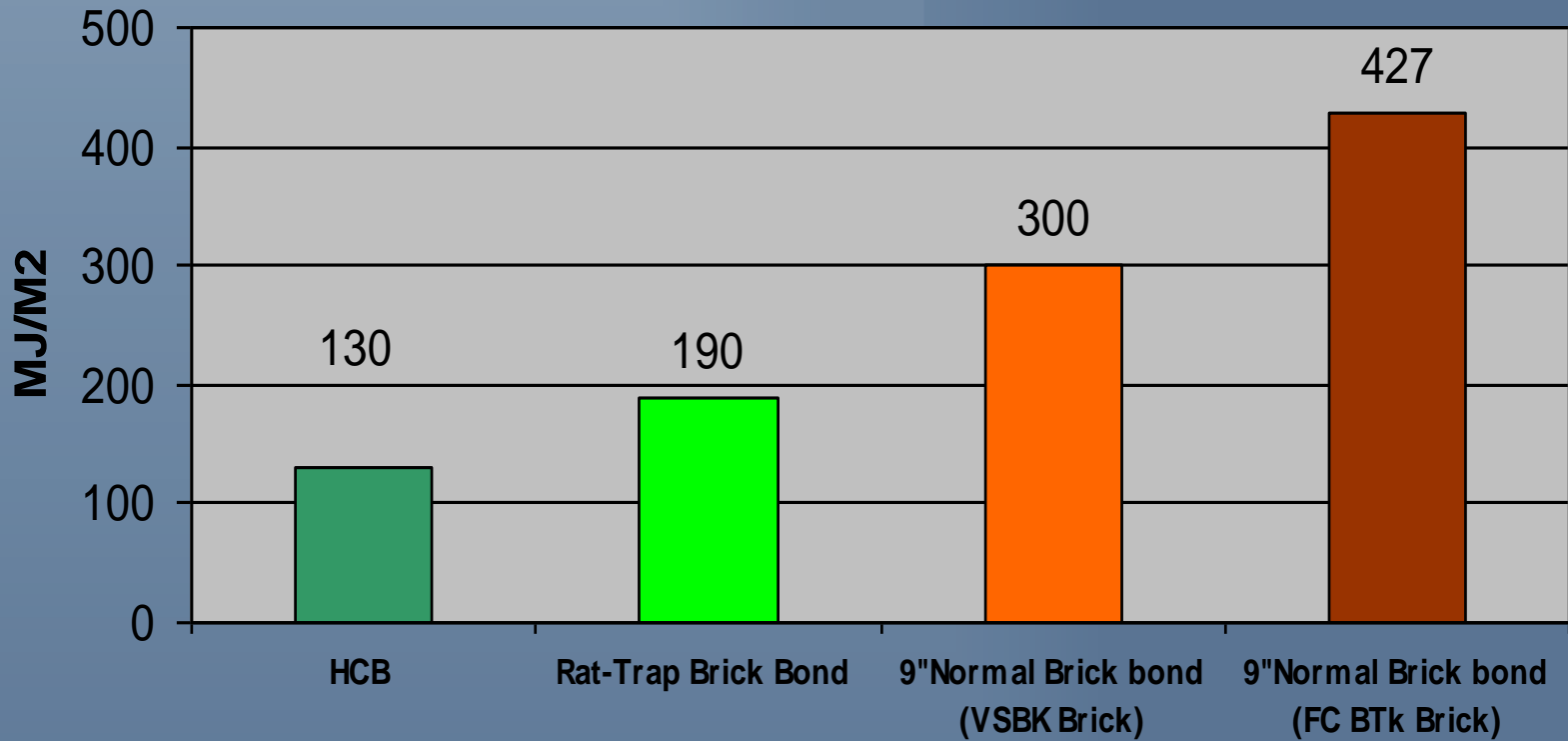


**ENGLISH BOND**



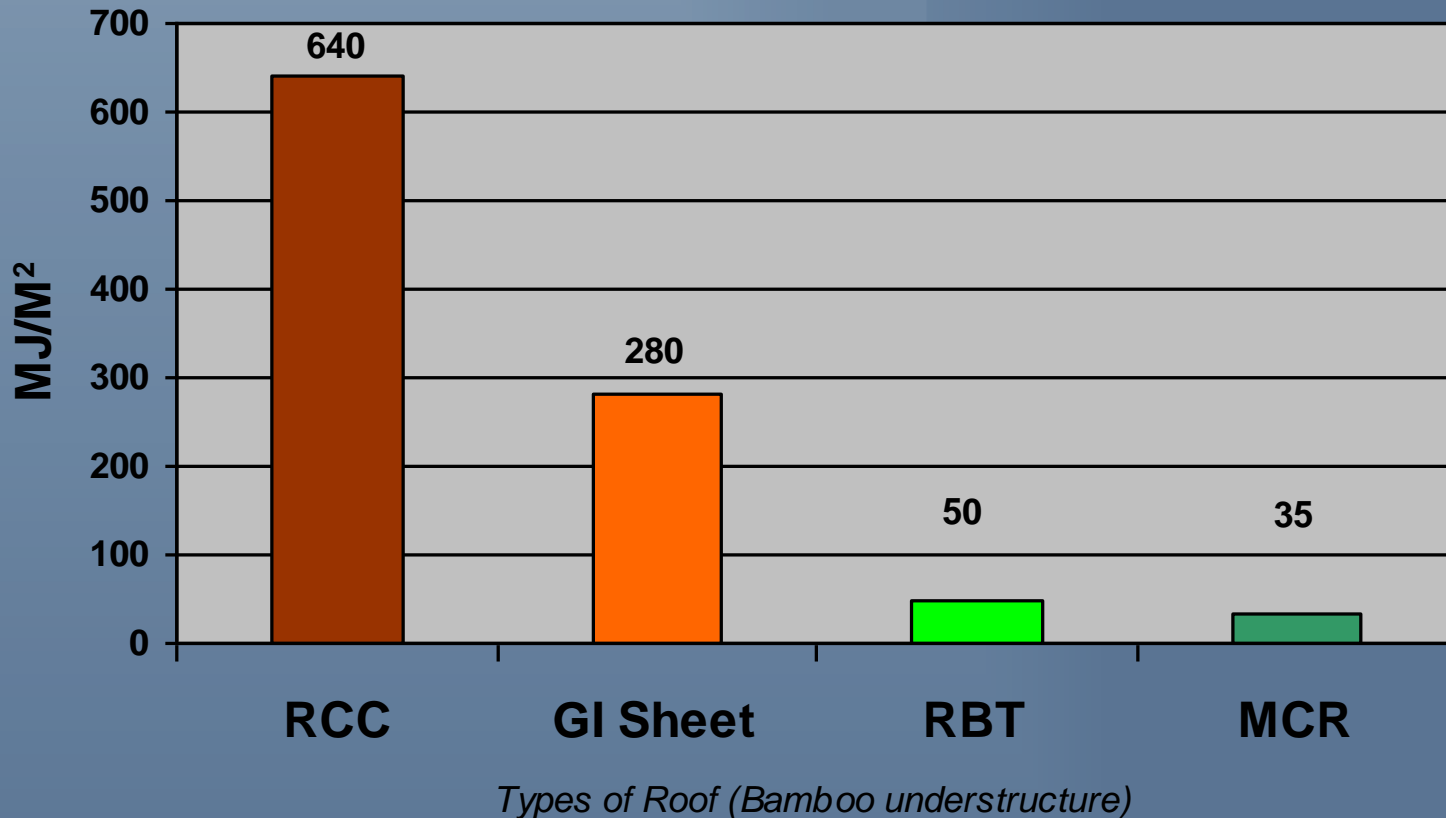
# Achievements in CESEF

Energy consumption in 1 m<sup>2</sup> in different walling system



## Achievements in CESEF

### Energy Consumption in 1m<sup>2</sup> in Roofing



## Potentials in promotion of VSBK

### Facts and Figures

- 200'000 vehicles circulate in the roads of the Valley
- 120 brick kilns are under operation in the Valley
- Vehicles produce 56% of total pollution
- Brick kilns produce 31% of total pollution
- A complete replacement of BTKs with VSBKs will reduce overall pollution by 25%.
- A new kiln costs USD 60'000
- 120 kilns cost USD 7'200'000 millions
- The annual turn over of the brick industry is USD 51 million

## Potentials in promotion of VSBK

How easy can we replace / monitor 200'000 vehicles?

How easy can we replace / monitor 120 kilns?

With an investment of only USD 7.2 million, we can reduce air pollution by 25%.

USD 7.2 million are 14% of the annual turnover of the industry.

