

Sector Highlight

Brick is a primary building material in many parts of Nepal, particularly in Kathmandu Valley and southern plains of Terai. Brick demand has increased dramatically for housing over recent decades. It is estimated that about 1100 Brick kilns are in operation in Nepal where approximately 200 brick kilns are operating in Kathmandu Valley. The capacities of these kilns range from 15,000 to 50,000 bricks per day. Clay is the main raw material for brick making, which is available at very low cost. Brick making is an energy and labour intensive process. Hand moulding of green bricks is widely practiced in Nepal. Majority of industries are seasonal and operates mostly for about six months during dry season (Dec to Jun). Natural draft system or bull trench kiln (BTK) predominant kiln types in Nepal. Moving Chimney BTKs that were prevalent in Nepal have been replaced widely by the fixed chimney BTKs after Government intervention in 2003. Apart from BTKs, Clamp, Hoffman and Vertical Shift Brick Kilns (VSBK) also exist in Nepal. Government has promulgated the standards on chimney height and emission standards for the brick kiln Industries in 2008 (GIZ/NEEP, 2012).



Energy Use

Coal is the main fuel used which is mainly imported from Assam in India. Apart from coal, a small fraction of sawdust/fire-wood baggase is also used as fuel in these kilns. The energy cost on product value is 32% for the Fixed Chimney BTK, whereas 14% for Vertical Shaft Brick Kiln. The efficiency margin or simply energy saving potential on thermal energy usage is estimated to be 34% and 4% respectively for FCBTK and VSBK respectively.(GIZ/NEEP, 2012)

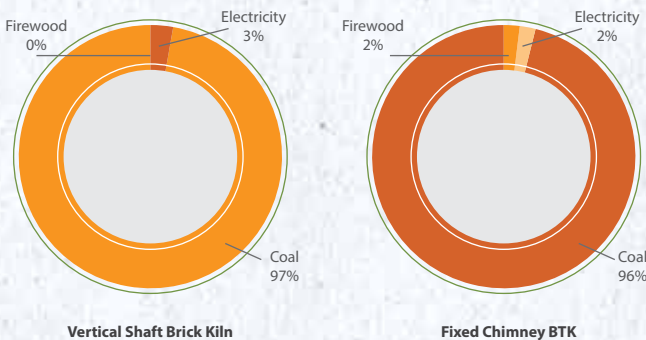


Figure 1: Energy use in FC-BTK (GIZ/NEEP, 2012¹)

Nepal Brick Industry by numbers

About 1,100 brick kilns in operation
 4 Billion bricks production
 NPR 2,529 Million revenue*
 175,000 persons employment*

*Status 2011/12, update not available

Specific Energy Consumption	Baseline 2012 ¹	2015 Scenario ²	Potential Target
Electrical	21.27 kWh*	-	-
Thermal	3951.09 MJ*	1900 – 3300 MJ*	1600-3000 MJ*

* per 1000 Bricks

Table 1: Specific energy consumption in Nepalese Brick Sector

Experiences from the past have identified many options for improving energy efficiency in the brick sector that are highly profitable with the payback period of less than 2 year.

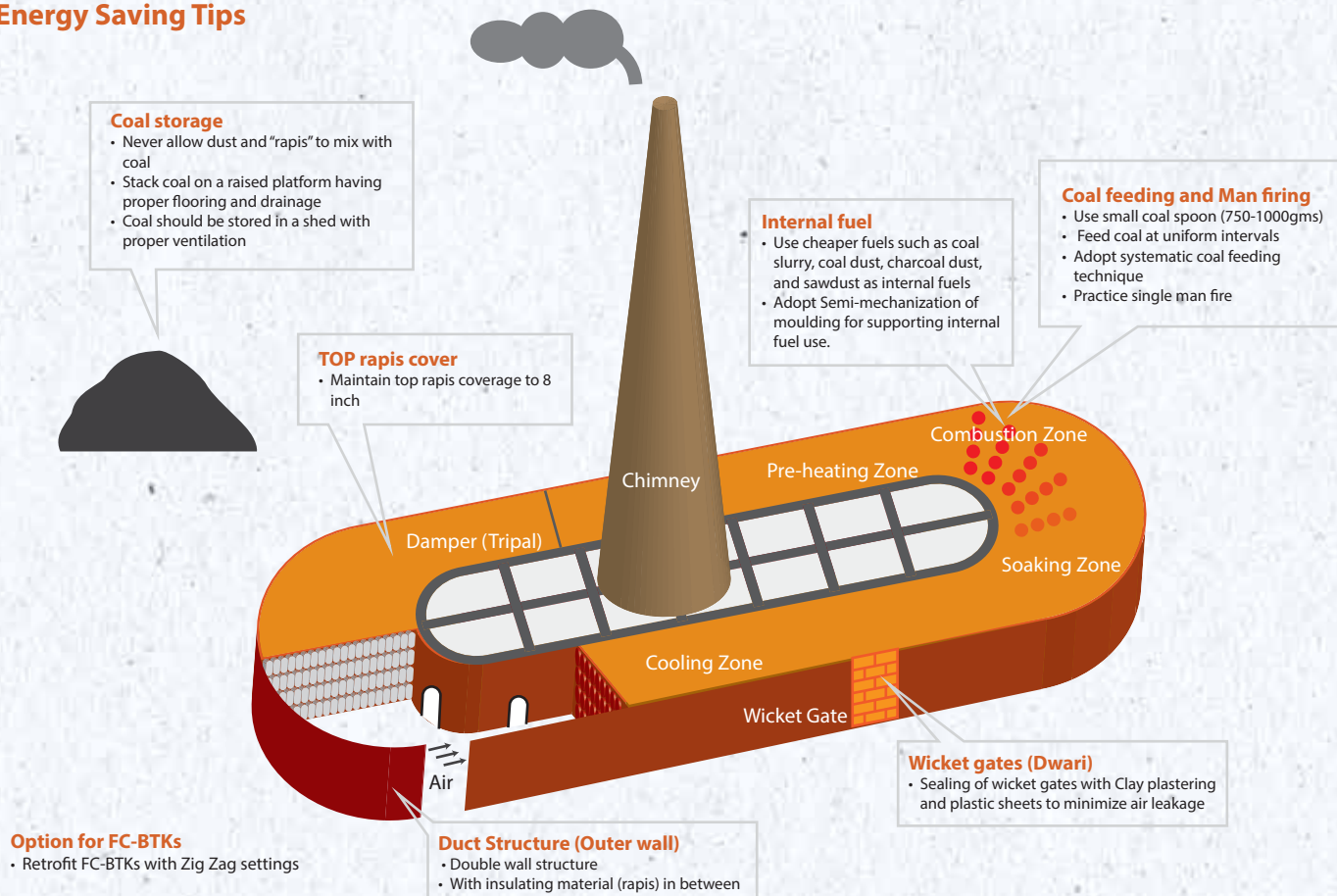
Option	Payback of investment
Ravish thickness improvement	Immediate
Insulation of Tawa	1 to 2 years
Revise the length of the chamber suitably and follow the rick setting used in natural draught zigzag kiln	Immediate
Conversion to Natural draught zigzag kiln	1.5 years

Table 2: Energy saving option and payback period of investment for brick sector (EEC/NEEP, 2015)

¹ GIZ/NEEP, 2012: Baseline study of selected sector industries

² EEC/NEEP, 2015: Pre-market assessment of audited industries

Energy Saving Tips



Case Study

Energy Audit conducted by EEC under NEEP, recorded specific energy consumption (SEC) of 3,210MJ/1000bricks of Coal in one of the brick kilns with a total capacity of 4,300,000 Bricks/Year. The industry was able to reduce its specific energy consumption to 1,900 after recommended operational improvements were made: the industry was able to make a saving of NPR worth 7.4 million annually without any investment.

During energy audit (SEC):	3210 MJ/1000 Bricks@ Coal
After Implementation (SEC):	1900 MJ/1000 Bricks
Savings Per 1000 Bricks:	1310 MJ/1000 Bricks
Total Production:	4,300,000 Bricks/Year
Annual Savings :	5,633,000 MJ/Year ~ 299.5 T of Coal
Monetary Savings:	Rs. 7,487,500
Total Investment Made:	None

Table 3: A success case from NEEP (EEC/NEEP, 2015)

Contact details

If you are interested to know more about energy efficiency, please, do not hesitate to contact us!

- If you are a business man

get information about energy saving opportunities in your company and get an energy audit done by our professional expert team

- If you are an engineer

explore the articles in our energy efficiency knowledge website and participate in our training programs

- If you are a banker...

participate in our awareness raising seminars and explore the new market of energy efficiency investment.

- If you are an energy auditor...

register in our database of energy efficiency professionals and be listed on our webpage.

- If you are a supplier for energy-efficient technology

register in our online B2B portal and list your products and services.



Federation of Nepalese Chambers of Commerce and Industry (FNCCI)

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