Factsheet

Energy Efficiency for Cement Industry

Sector Highlights

Cement is one of the basic construction materials in Nepal. Annual gross consumption of cement amounts to 2,500,000 tons and about 70% of it is produced in Nepal. The annual growth in demand is estimated about 20%. Nepalese Cement Industries are categorized into two types namely limestone-based and clinker-based. Despite of abundant availability of limestone resource in Nepal, clinker-based cement industries exceeds the other. However, as of now, altogether two government-owned and 59 private cement industries have been registered under Department of Industry in Nepal. Around six billion Nepalese Rupees have been invested by private entrepreneurs in this sector. Few large cement industries with production capacity between 900 to 1,500 tons per day are in pipe line. With this expansion in the production, it is expected that Nepal will be self-sufficient in cement production after few years (GIZ/NEEP, 2012).

Energy Saving Potential

Main sources of energy used in the Cement industries in Nepal are electricity and coal. Coal is mainly used in limestone-based units for calcinations, whereas in some cases, in plants having co-generation system used for electricity generation.

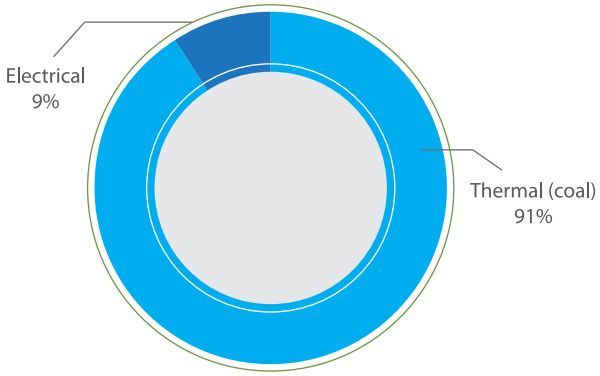


Figure 1: Energy use in Nepalese Cement Industry (GIZ/NEEP, 2012[1])

The energy cost on product value is 48% for the limestone-based cement industries, where as 5% for the clinker-based cement industries. Energy saving potential is estimated to be 41% and 49% respectively for limestone and clinker-based industries.

Types of Cement Plant	Electrical (weighted average)	Thermal (weighted average)
Limestone based cement plant	149 kWh/MT*	5,411 MJ/MT**
Clinker based cement plant	49 kWh/MT*	-

*MT Cement **MT Clinker

Table 1: Specific energy consumption in Nepalese Cement Sector (GIZ/NEEP, 2012[1])

Nepal Cement Industry by numbers

2,642,521 tons production
NPR 6,962 Million revenue*
2,225 person employment*
48% energy cost in limestone-based
5% energy cost in clinker-based

Savings potential - annual
81,244 MWh electricity
1,598,359 GJ thermal energy
1,104,890,923 NPR Limestone-based
383,938,427 NPR Clinker-based
88,596 kg CO_2 emissions

*Status 2006/07, update not available

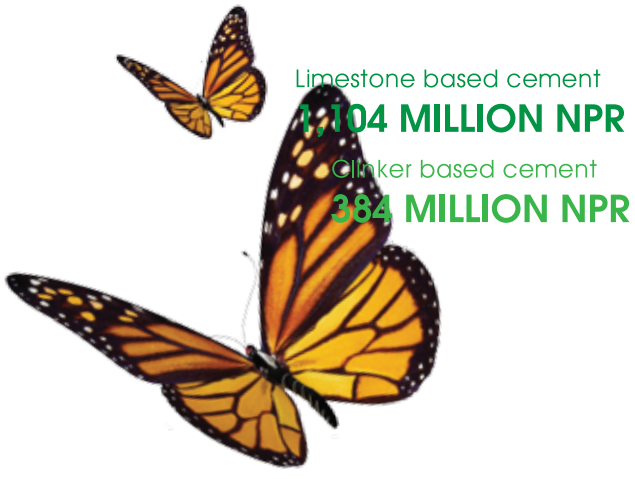


Figure 2: Monetary saving potential in Nepalese Cement Sector (GIZ/NEEP, 2012[1])

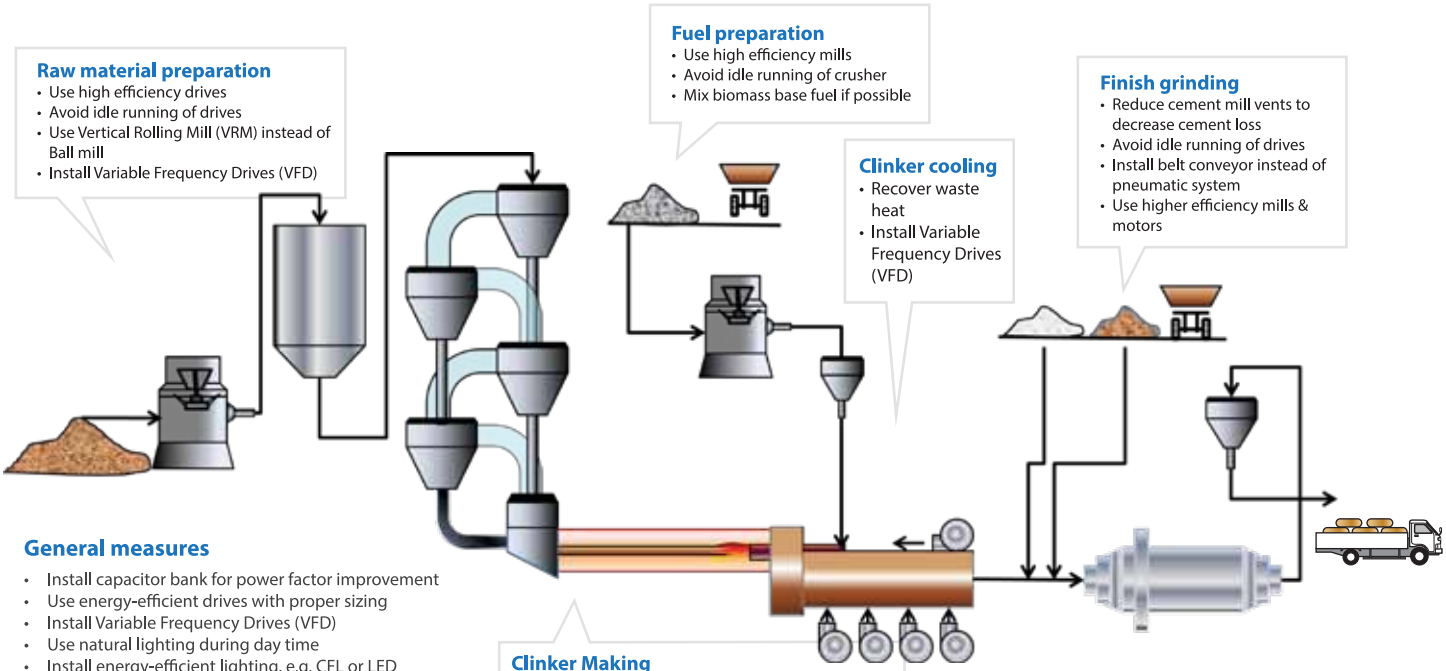
[1] GIZ/NEEP, 2012: Baseline study of selected sector Industries.

Experiences from the past have identified many energy saving options for the cement sector that are highly profitable with payback periods of investment of less than 2 years.

Option	Payback of investment
Improvement of power factor	1.5 years
Convert delta to star connection for motors loaded below 50% of full load	1 year
Installation of High Efficiency Dynamic Separator for Raw Mill	2 years
Replacement of the Air-lift with Bucket Elevator for Raw-meal Transport to the Silo	3 years
Replacement of Existing Cyclones with Low Pressure Drop (LP) Cyclones	2 year
Control raw meal feed size by installation of tertiary crusher	1.5 years
Install demand controller for management of electrical demand	1 year

Table 2: Energy saving option and payback period of investment for cement sector (Danida/ESPS, 2005[2])

Energy Saving Tips



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.

eec energy efficiency centre

FNCCI

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giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

[2] Danida/ESPS, 2005: Cleaner production report of cement industry.