



Building sustainable milestones

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With the advent of industrialization and urbanization, there has been considerable change in the climate and this is likely to continue as economies grow amidst surging population. World over, climate change and global warming is impelling governments and organizations to consider environment conservation in order to ensure survival of mankind. As the third most energy intensive industry after power and iron & steel, the cement industry is amongst the top contributors to greenhouse gas emissions. India is the second biggest producer of cement in the world and the industry is likely to double in next decade as far as capacity is concerned.

Amidst this background, a group of leading cement companies got together over a decade ago and developed 'Cement Sustainability Initiative' (CSI) under World Business Council for Sustainable Development (WBCSD). This initiative was thought necessary after major producers felt that the long run survival of energy intensive industry is possible through conservation of environment. Cement producers realized that making energy conservation a part of their business strategy also improved their profitability as it was a major cost part.

Today, under this initiative major producers across more than 100 countries are paving way for sustainable

practices in cement industry. These producers together, account for close to 30 percent of world cement production and this share is likely to rise as more cement producers join the initiative to support energy conservation practices. Environment conservation is the only feasible option available to cement companies for ensuring higher profitability and survival in the long-run as the industry is highly dependent on natural resources like limestone, lignite, coal and gypsum.

After power and iron & steel, cement industry is the third highest consumer of coal with compounded annual growth rate of around 3.5 percent during period from 1970-71 to 2011-12. Cement industry consumes about 15 million tons of coal annually as compared to 3.5 million tons four decades ago. Due to ongoing

global slowdown, the coal prices have declined in last few months, but they are unlikely to remain subdued as recovery in developed and developing countries is likely to increase its demand again putting pressure on prices.

The key factor that drives sustainability of any industry is technology, and cement industry is no exception. The industry has to scout for newer technologies to ensure that carbon emissions are reduced over the next few decades as production and consumption grows keeping pace with global economic recovery. Though technology adoption in the last few years has enabled many cement companies to reduce carbon emissions, a break-through technology is still required as existing ones are not sufficient in the long-run.

Indian cement companies are also adopting new technologies for environment conservation and reducing carbon emissions. According to data available from WBCSD, Indian cement industry has cut carbon emissions by 25 percent to 602 kg per ton of product in 2011 from 803 kg per ton in 1990. This is against reduction of 17 percent to 629 kg per ton from 756 kg per ton during the same period globally. For the cement industry, the efforts have not yet stopped, rather they have just begun.

Indian companies, too, are using various measures for environment

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conservation. To control air pollution, surface miners are used which use zero dust emission technology. It also helps in reducing noise pollution. For controlling water pollution, the waste water treatment plant is used for recycling water from the plant. Many companies have also gone for water conservation, wherever possible. Construction of check dams, conversion of mined pits to reservoirs, underground water recharge tanks and usage of drip irrigation for green belt development have led to water conservation in areas where water is scarcely available. Apart from the mentioned measures, many companies are also using waste materials like fly ash and bio hazardous materials for production of PPC cement and slag cement.

Last year, Indian Bureau of Energy Efficiency launched the scheme 'Perform, Achieve and Trade' (PAT) under which it has set energy efficiency targets for industries with high energy consumption. Industries which over-achieve targets are awarded certificates that can be traded at energy exchanges, the price of which is determined by market. Still in the nascent stage, the scheme is likely to get good response from companies who are committed to environment conservation.


Those companies who are working for environment conservation are also applying for SA8000 certification, an audit certificate developed by Social Accountability International in 1997.

Cement Technology Roadmap Highlights

In 2009, international Energy Agency (IEA) together with WBCSD came out with roadmap for its members to reduce carbon emissions up to 2050. The report suggests four levers for carbon emission reductions:

- Thermal and electrical efficiency: for reduction through energy efficiency equipments
- Alternative fuels: by using less carbon-intensive fossil fuel and higher usage of biomass fuels
- Clinker Substitution: by substituting carbon-intensive clinker with low-carbon material with cementitious properties
- Carbon capture and storage (CCS): by capturing carbon dioxide before it is released in the atmosphere

This certificate acknowledges all the activities undertaken by the company that impacts society.

The next decade is likely to witness remarkable changes in environment conservation across industries. The cement industry, too, will play its own part for sustainable development of its stakeholders including the society. As the latest CSI Progress Report rightly says, "The world expects business not only to manage its own sustainability issues, but to help society manage wider issues." 

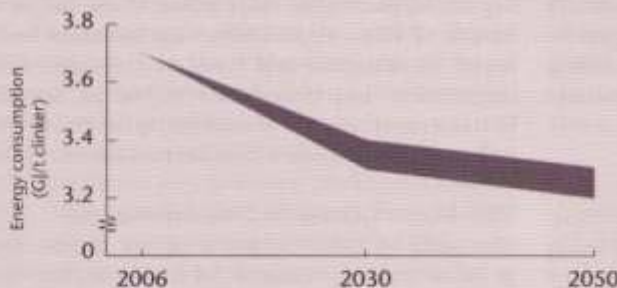
(The author is the Director, Sanghi Industries. Views expressed by him are personal)

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Projected thermal energy consumption for a cement plant using state of the art technology

Thermal efficiency

Thermal energy consumption for clinker manufacture in different years:



Source: ECRA Technology Papers (2009)

Note: Both graphs show estimated averages

Note: The IEA forecast includes global decarbonisation of electricity by 2050. This forecast is used only in the mitigation case and not in the baseline, therefore CO₂ emissions and CCS volumes in the mitigation case are not affected by electric efficiency.

Electric efficiency (approximately 10% of energy consumed)

Electric energy consumption for cement manufacture in different years (without CCS):

