

# Dalmia Bharat Cement

ESTIMATED CUMULATIVE RESULTS (2011-2012)

Dalmia Cement is India's largest private cement company with 9mm tons per annum manufacturing capacity, a 45.4% stake in OCL India Limited (5.3mm tons per annum manufacturing capacity in East India) along with the upcoming green field cement projects across the country.

**\$31.8M**  
IN AVOIDED COSTS

**281,700**  
METRIC TONS OF GHG EMISSIONS AVOIDED

## Key Environmental Performance Area: GREENHOUSE GAS EMISSIONS (CEMENT PRODUCTION)

### RESULTS

Since 2011<sup>1</sup> Dalmia Cement has actively measured energy consumption in its production facility at Ariyalur. In absolute terms, GHG emissions from these sources have increased approximately 35% compared to a 2010 baseline due to increased production. Over the same time period, efficiency has improved by approximately 47% (GHGs/clinker production volume) at the production facilities. This improvement in efficiency has allowed Dalmia to avoid almost \$29.3 million in costs and approximately 249,000 metric tons of GHG emissions since 2010.

#### Dalmia Cement: Cement Production GHG Efficiency (2010 Baseline)<sup>2</sup>

Estimated Results	2011	2012	2013	Total
Greenhouse gas emissions avoided (metric tons)	30,800	91,600	126,600	249,000
Energy costs avoided (\$)	\$2,100,000	\$12,600,000	\$14,600,000	\$29,250,000
Change in productivity (GHGs/clinker production)	-17%	-25%	-14%	-47%
Change in absolute GHGs	38%	2%	-4%	35%

**Notes:**

- See [methodology section](#) for description of avoided and efficiency calculations.
- The total % change is aggregate change between the baseline year and the most recent year of data. All other % changes are expressed as year-over-year.
- Reported numbers are rounded and may not produce the same results when used to analyze percent changes or total impact.

### ACTIONS

In 2013 and 2014, Dalmia Cement implemented the following practices to achieve these results:

- Ensured that rotary kiln is highly utilized whenever running to reduce radiation losses
- Ensured that raw materials going into rotary kiln are uniform and homogenous
- Reduced excess air in system so that energy is not wasted

## Key Environmental Performance Area: GREENHOUSE GAS EMISSIONS (CAPTIVE POWER PLANT)

### RESULTS

In 2013, Dalmia Cement continued to actively measure energy efficiency in its captive power plant as part of the Green Portfolio Program. In absolute terms, GHG emissions from these sources have increased approximately 37% compared to a 2010 baseline due to increased production. Over the same time period, efficiency has improved by approximately 7% (GHGs/volume of energy produced) at the captive power plant. This improvement in efficiency has allowed Dalmia to avoid approximately \$283,000 in costs and 3,800 in GHG emissions since 2010.

#### Dalmia Cement: Cement Production Auxiliary Power GHG Efficiency (2010 Baseline)

Estimated Results	2011	2012	2013	Total
Greenhouse gas emissions avoided (metric tons)	1,200	1,100	1,500	3,800
Energy costs avoided (\$)	\$104,000	\$86,000	\$94,000	\$283,000
Change in productivity (GHGs/clinker production)	-7%	2%	-2%	-7%
Change in absolute GHGs	7%	25%	3%	37%

#### Notes:

- See [methodology section](#) for description of avoided and efficiency calculations.
- The total % change is aggregate change between the baseline year and the most recent year of data. All other % changes are expressed as year-over-year.
- Reported numbers are rounded and may not produce the same results when used to analyze percent changes or total impact.

Over the same time period, Dalmia worked to improve the efficiency of power production at the captive power plant, which is measured in heat rate (kcal/kWh). In absolute terms, GHG emissions from this source increased an estimated 47% since 2010 due to an increase in production. Over the same time period, efficiency improved by 8% (kcal/kWh). As a result of this efficiency improvement, Dalmia was able to avoid approximately \$2.3 million in costs and 28,900 metric tons of GHG emissions since 2010.

#### Dalmia Cement: Cement Production Heat Rate GHG Efficiency (2010 Baseline)

Estimated Results	2011	2012	2013	Total
Greenhouse gas emissions avoided (metric tons)	7,500	9,000	12,500	28,900
Energy costs avoided (\$)	\$706,000	\$771,000	\$848,000	\$2,325,000
Change in productivity (GHGs/clinker production)	-6%	0%	-2%	-8%
Change in absolute GHGs	15%	22%	4%	37%

#### Notes:

- See [methodology section](#) for description of avoided and efficiency calculations.
- The total % change is aggregate change between the baseline year and the most recent year of data. All other % changes are expressed as year-over-year.
- Reported numbers are rounded and may not produce the same results when used to analyze percent changes or total impact.

## ACTIONS

In 2013, Dalmia Cement implemented the following practices to achieve these results:

- Optimized combustion efficiency in the Boiler
- Reduced thermal losses by adding proper insulation
- Moved to optimal air-fuel ratios to get to lower heat rates

Dalmia Cement enrolled in the Green Portfolio Program in 2011 and is reporting results for the second time.<sup>3</sup>

*Note: Reported numbers are rounded and may not produce the same results when used to analyze percent changes or total impact.*



1 Dalmia's fiscal years begin in March. Therefore, where this document refers to 2010, 2011, 2012, 2013 is consistent with Dalmia's fiscal years 2011, 2012, 2013, and 2014 respectively.

2 In 2013, past energy costs avoided were restated using average costs associated with different energy sources, which resulted in a more accurate and higher cost savings than reported in 2012.

3 In 2013, Dalmia discontinued its waste program, which consumed lime sludge as part of the production process. Therefore, Dalmia will no longer be reporting on this activity.