

## Summary of achievements and the Way forward

S. No.	Summary of Achievement	Unit	Identified	Reduction achieved	%
i	No of Projects Implemented	Nos	350	190	54
ii	Investment	₹ Lakhs/Yr(Mn USD)	60843 (95.8)	12569 (19.79)	21
iii	Electrical Savings	Mwh per year	233606	111487	48
iv	Energy Savings	TOE per year	856178	235309	27
v	Energy Cost Savings	₹ Lakhs/Yr(Mn USD)	15532 (24.46)	5426 (8.54)	35
vi	Total CO <sub>2</sub> Emission Reduction from	tCO <sub>2</sub> /Yr	508762	147409	29

### CSI Members in India



### Further steps

- CII with the support of IFC, Technology suppliers and all other stakeholders, can facilitate cement plants towards furthering resource efficiency
- Support for implementation of identified opportunities
- Lock in best of efficiencies for green field and brown field projects
- Walk with the industry to achieve the low carbon roadmap

For further details, please contact:

P V Kiran Ananth  
kiran.ananth@cii.in  
+91 40 4418 5152  
www.cii.in

Sivaram Krishnamoorthy  
skrishnamoorthy2@ifc.org  
+91 11 4111 1000  
www.ifc.org

Joe Phelan  
phelan@wbcsd.org  
+91 11 4138 7361  
www.wbcsd.org



## Creating Impact

Low Carbon Technology Roadmap for Indian Cement Industry :  
**Resource Efficiency Studies**  
 in Cement Plants Based on Technology Papers



## Technology Roadmap - First step towards Green Cement

Low Carbon Technology Roadmap (LCTR) for Indian cement industry is a unique sector level program which outlines emissions reduction potential from all technologies that can be implemented for halving the GHG emission intensity by 2050.

The roadmap was jointly developed by WBCSD and IEA, in consultation with Confederation of Indian Industry, India (CII), National Council of Cement and Building Materials (NCB) and supported by IFC.

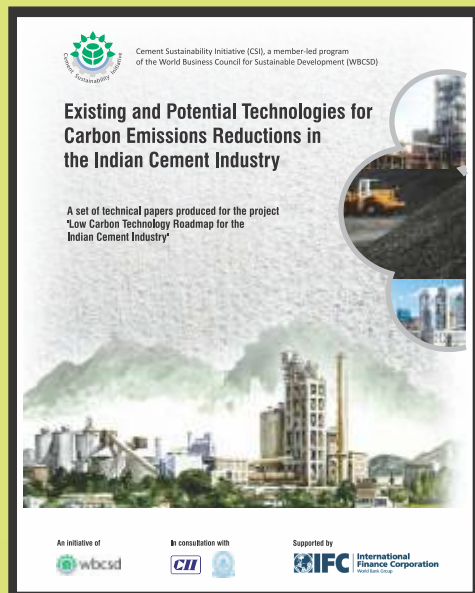
This initiative was led by the Cement Sustainability Initiative (CSI) members based in India, to develop a peer reviewed roadmap in their common and shared pursuit towards low carbon development.

Technology Roadmap document highlights current emission levels of the sector (with more than 75% of GHG from Indian cement sector accounted), anticipated performance in near future and details technical, financial and policy drivers and barriers for achieving the desired outcome. More details of the roadmap can be found at the link\*.

## Technology Papers

As part of this initiative, a document highlighting existing and potential technologies for carbon emissions reductions in the Indian Cement Industry comprising of 27 technology papers in following areas were developed

- Energy efficiency
- Alternative Fuel Utilization
- Waste Heat Recovery
- Clinker Factor improvement
- Newer developments and R&D



	2010	2020	2030	2050	2020	2030	2050
Production (Mt)	217	416	598	780	492	848	1361
Pre-capita consumption (kg/capita)	188	309	400	467	364	565	812
Clinker-to-cement ratio	0.74	0.70	0.64	0.58	0.70	0.64	0.58
Electric intensity of cement production (kWh/t cement)	80	76	73	71	75	72	70
Thermal intensity of clinker production (kcal/kg clinker)	725	709	694	680	703	690	678
Alternative fuel use (as a share of thermal energy consumption)(%)	0.6	5	19	25	5	19	25

\* <http://www.wbcscement.org/index.php/key-issues/climate-protection/technology-roadmap/india-roadmap>

## Resource Efficiency Study at Facility Level

To facilitate implementation of the roadmap at the plant level, resource efficiency study at few facilities were undertaken on a pilot mode. This was supported by IFC.

The objective of Resource Efficiency study is to provide knowledge transfer by application of the roadmap in the plant, within the group, within sector and Region (India, Bangladesh, Nepal & Sri Lanka).

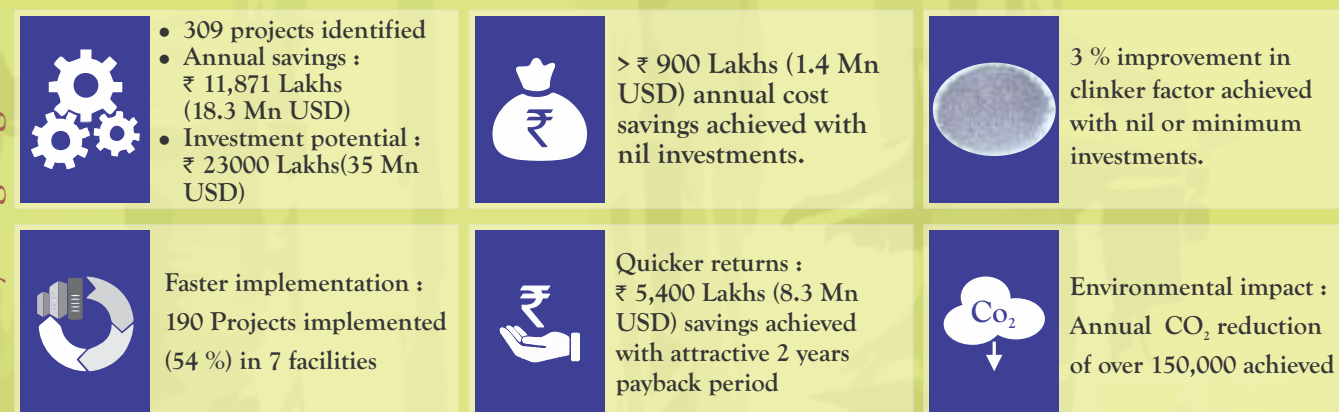
## Resource Efficiency Study objectives

- Capacity building of plant team to identify opportunities for reducing GHG emissions
- Explore the implementation of technology options identified in Roadmap
- Estimate the GHG benefits anticipated
- Estimate cost economics
- Support implementation of the identified opportunities by facilitating with FIs
- Exploring the feasibility of replicating the recommendations in other facilities of the group through discussions and capacity building measures

Resource Efficiency studies have been successfully completed at the following facilities.

ACC Limited	Bargarh Cement Works
Ambuja Cements Limited	Ambujanagar
Dalmia Cement (Bharat ) Limited	Dalmiapuram
My Home Industries Private Limited	Mellacheruvu
Shree cements limited	Ras unit
Sonapur Cements Private Limited	Dung, Nepal
Ultratech Cements Limited	Vikram cement works

## Study Highlights



## Process Flow

