



FICCI Circular Economy Awards
Presentation: Dalmia Cement





“Companies such as Dalmia Cement and Mahindra are driving innovation. But we need many more to join them”.

Hon’ble UN Secretary-General Mr. António Guterres (Aug. 2020)



“Global companies such as Apple, Dalmia Cement and Movida have made net zero commitments. I am enormously grateful to all those who have come forward with announcements today”.

Hon’ble COP-26 President Mr. Alok Sharma (12 Dec. 2020)



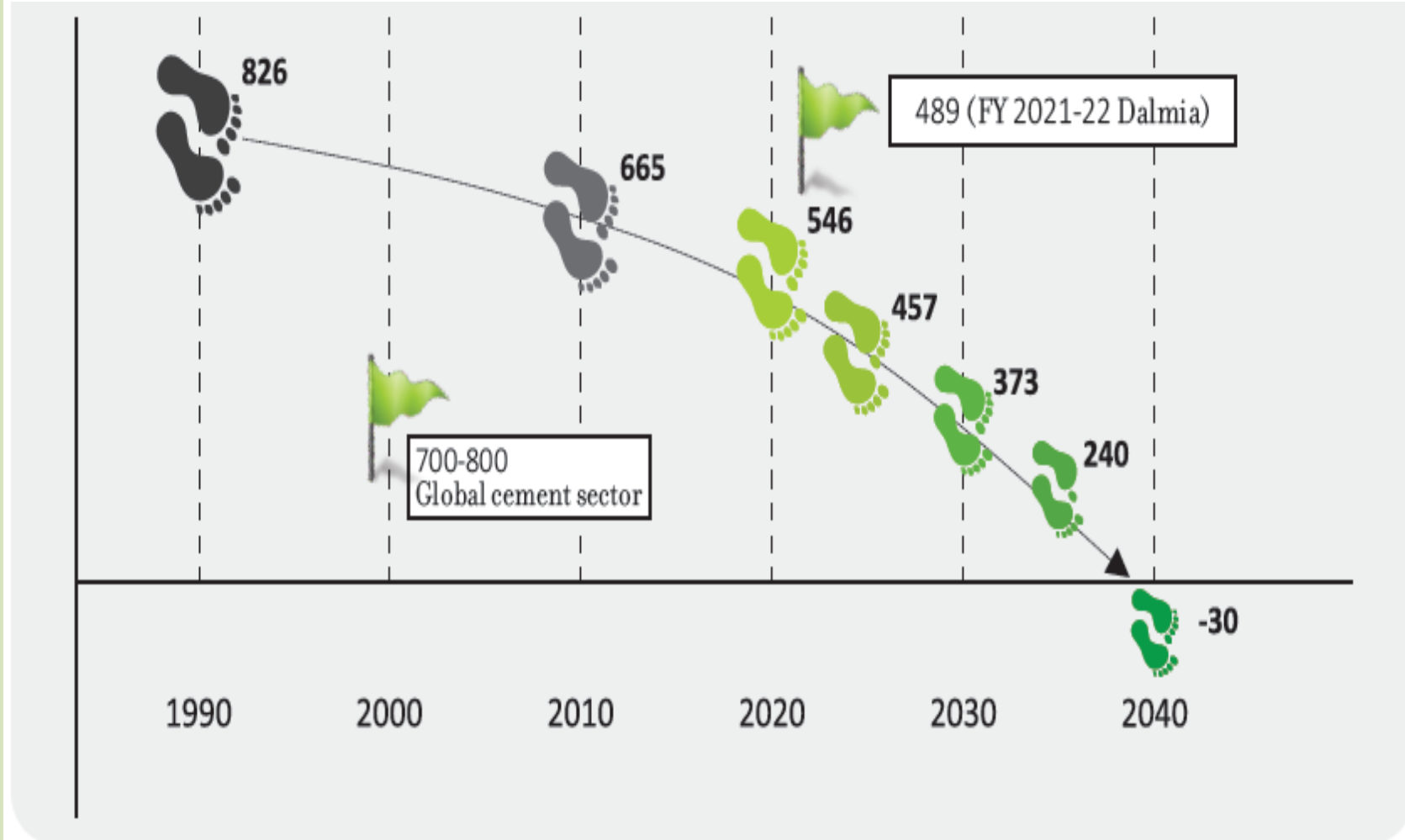
“Dalmia Cement is doing amazing work and innovation on Climate Change”.

Mr. Al Gore, former Vice President of US, Global Climate Activist and a Noble laureate

- COP 26/27 Business Leader,
- Globally, first in heavy-industry sector to commit carbon negative roadmap in 2018,
- Designated as Carbon Pricing Champion by CPLC, World Bank,
- Among the five climate defenders identified by BBC World globally,
- Ranked #1 by CDP in global cement sector on business readiness for a low carbon economy transition,
- First triple joiner globally of RE 100, EP 100 and EV 100,
- First Indian headquartered cement company committed to Science Based Targets (SBT) and approved SBTi targets,
- 13.3 times water positive cement group

Dalmia Carbon Negative Roadmap – Past, Present and the Future

- **Circular Economy:** 100% low carbon cement production by 2026
- **Energy productivity:** Doubling of the energy productivity by 2030
- **Renewable Electricity:** Use of 100% renewable power under fossil free electricity initiative by 2030 (RE 100)
- **Fossil Free Thermal Energy:** Use of renewable biomass, hazardous waste, hydrogen and MSW to fully replace fossil fuel by 2035
- **Electric Vehicles:** EV 100 commitment for significant Electric Vehicle transition by 2030
- **Nature Based Solutions:** Development of Carbon Sinks / Carbon Sequestration
- **Advanced Technology Adoption:** CCU and other green technologies by 2040



Dalmia Bharat SBTi approved targets and performance

Dalmia Bharat Limited ★ India, Asia			-
Date published/updated 2022	Target summary Near term: Well-below 2°C by FY2034 Net zero: Committed ★ Business Ambition for 1.5°C campaign member		
Sector Construction Materials			



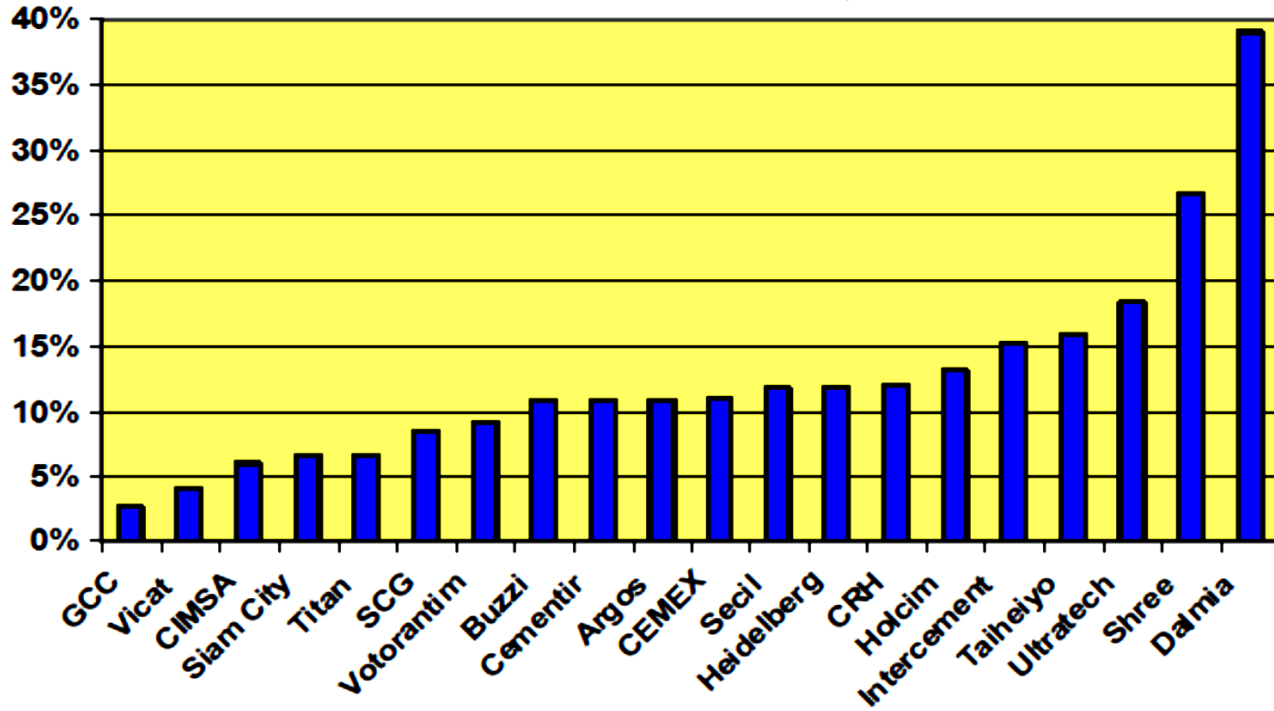
- Dalmia Bharat Limited commits to reduce scope 1 GHG emissions 32% per ton of cementitious material by FY2034 from a FY2019 base year.
- Dalmia Bharat Limited also commits to reduce scope 2 GHG emissions 61.9% per ton of cementitious material within the same timeframe.
- The target boundary includes biogenic emissions and removals from bioenergy feedstocks.

9% reduction achieved in Scope 1 achieved against 2019 SBTi baseline

30% reduction achieved in Scope 2 against 2019 SBTi baseline

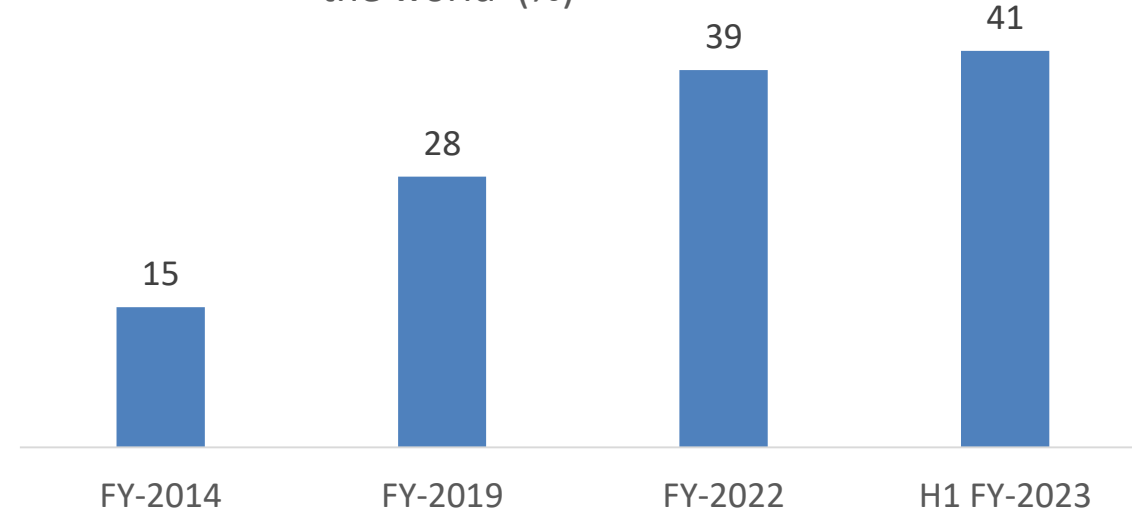
Progress on use of industrial waste materials in the cement process

% Alternative Materials, 2021

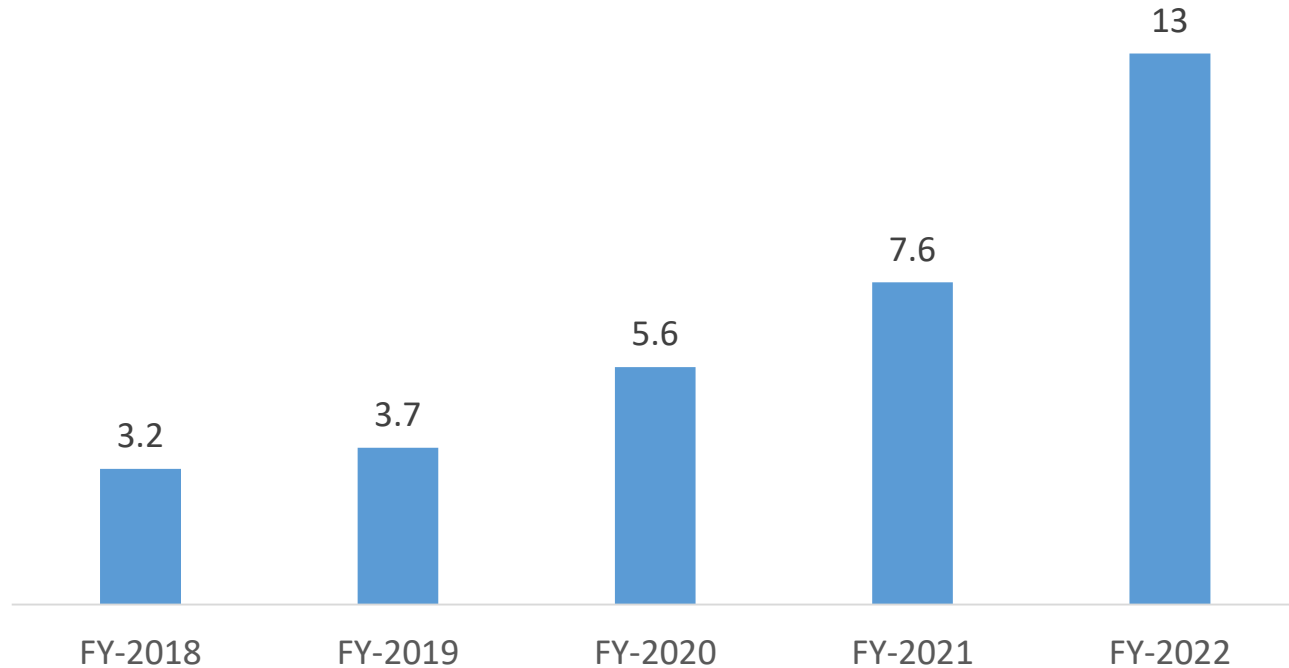


Source: GCCA Conference and CSR Consulting

Alternative raw material utilisation rate – Best in the world (%)



Thermal Substitution Rate of green fuels having sustainable biomass and waste origin (%) – Replace fossil fuel in the cement kiln



Wastelands to sustainable biomass

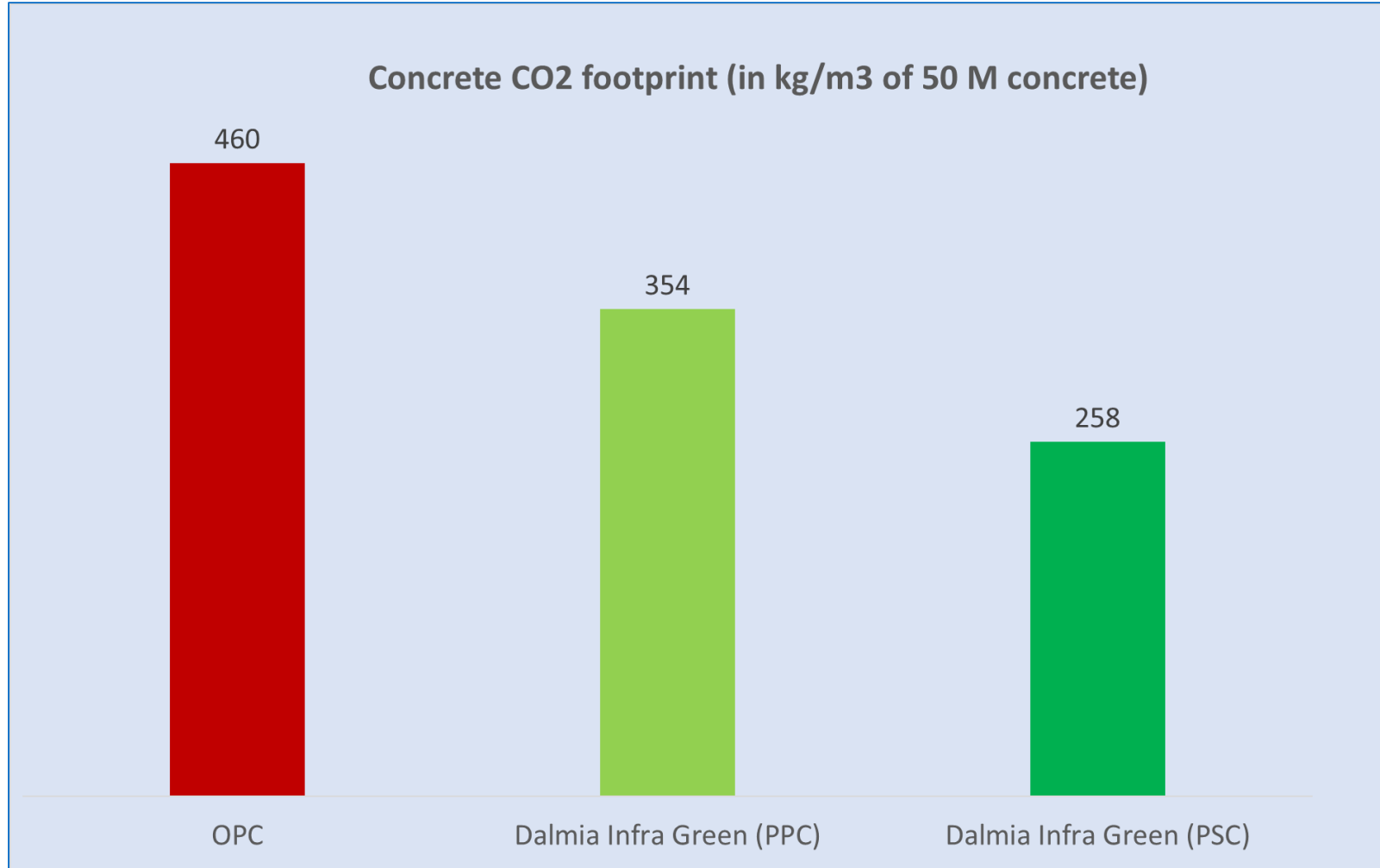
India has proven 26 million Hectares of wasteland. Just 40% of this land can supply over 1 billion tonnes of renewable and sustainable biomass annually with 6 million local jobs and 400 million tonne oil equivalents of renewable primary energy which is nearly total primary energy provided by coal in India.

Such opportunities would exist across the countries and economies to replace fossil fuels with renewable and sustainable biomass like Bamboo.

Collaboration and Innovation with advanced technology deployment

- Partnerships with more than 50 local municipalities
- > 20 waste types used as alternative raw materials to replace limestone and other natural minerals
- > 45 waste types used as alternative fuels to replace fossil fuels
- Dalmia Magic and Dalmia Infra Green – innovative product range to boost circular economy drive
- 13.3 times water positive organisation – Recycling back water to the nature
- 2 Bypass dust systems commissioned to increase the use of alternative fuels – first of its kind in India
- Using biodiesel (from waste bio oils) to replace liquid fossil fuels – innovated biodiesel filtering system in plants
- **Improved early and late strength** – Shows 20% more strengths than 53 grade OPC (70 MPa at 28 days)
- **Saves water** - needs 15-20% less water compared to OPC
- **Eliminates requirement of other chemical admixtures** to produce high strength, high durability and water proof concrete
- **Low shrinkage characteristics provide better crack control** as compared to OPC
- **Provides more sellable space** – Possible to make beams and columns more slender
- **Significant reduction in the construction time** - Runways, Highway Stretches, Metro sections can be opened in 3 days

Dalmia Infra Green Cement – Low product carbon footprint and lower concrete cost with better strength and workability as compared to OPC



In comparison to OPC cement, when used for M 50 concrete:

- Dalmia Infra Green PSC saves 44% CO₂ emissions
- Dalmia Infra Green PPC saves 23% CO₂ emissions

Provides dual benefit of less cement use in concrete and lower carbon footprint of cement itself

Dalmia CCU Feasibility Report - ADB

Product	Urea	Soda Ash	Mineralization	Methanol	Algae feed	Algal Oil
TRL	9	9	8 to 9	7 to 9	5 to 7	5 to 7
Overall Score *	89	79	87	79	69	75

Description	0.5 million ton CO2 capture capacity	1.0 million ton CO2 capture capacity
Urea production (MTPA)	0.68	1.36
CAPEX (Rs. Crore)	2,642	4,004
OPEX (Rs. Crores)	1210	1,180
Maximum CO2 abatement potential (MTPA)	1.38	2.76
Payback period (base case)	14.8 years	12.1 years
Carbon credit price needed for VGF (USD/ton)	86 for 20% Equity IRR	58 for 20% Equity IRR
Urea selling price (base case)	270 USD/ton (19,519/ton)	
Urea selling price needed (without VGF)	325 USD/ton (23,495) with RE price Rs. 3.0 to have > 20% equity IRR	

Nature Based Solutions

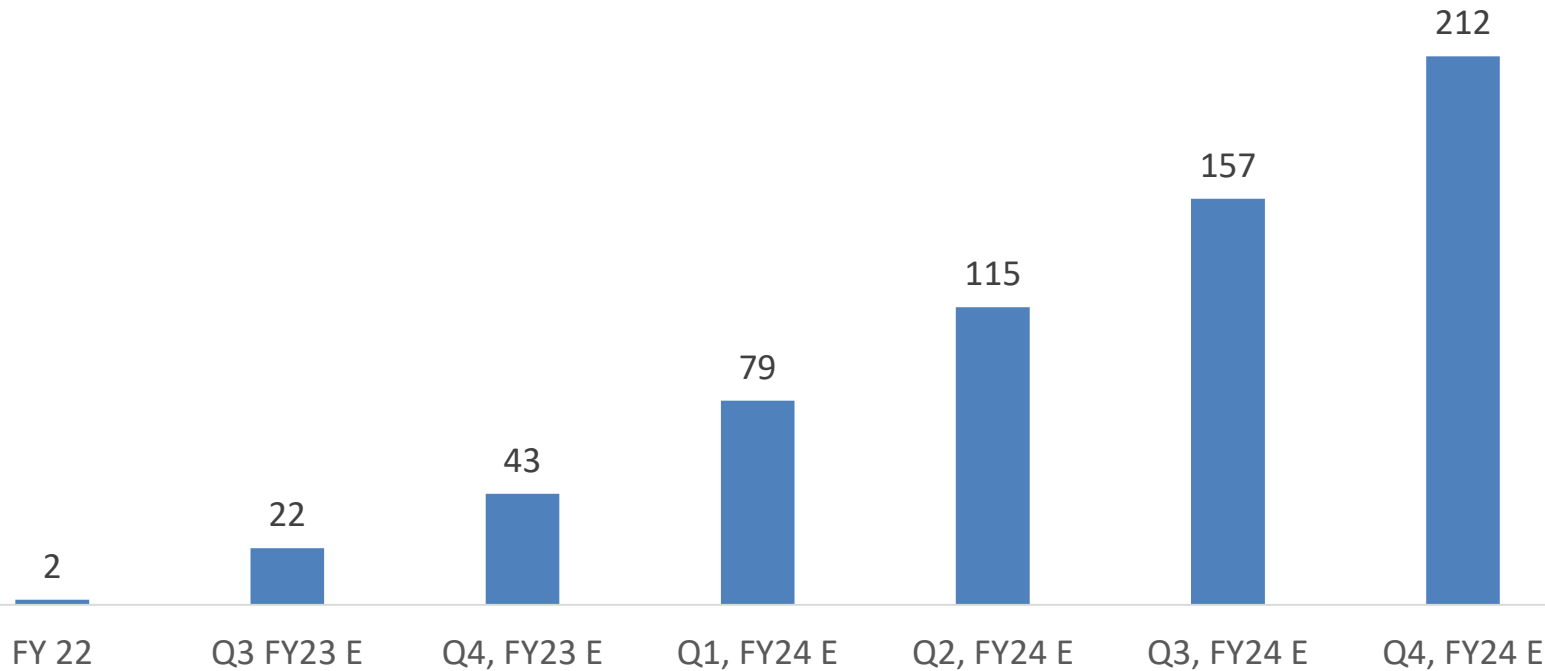
- Partnerships on deployment of nature based carbon mitigation and adaptation routes for emissions reduction,
- Demonstration pilots undertaken on use of renewable and sustainable biomass “Bamboo” to replace fossil fuels,
- Policy advocacy for availability of wastelands to grow carbon sinks and sustainable biomass under public-private partnership,
- Policy advocacy on high quality international carbon markets access for Nature Based Solutions
- Collaborations with multiple stakeholders to create local and just decarbonisation solutions at industrial scale with local employment



Bamboo demonstration project at Dalmia Kadapa plant for sustainable and renewable biomass use

Electric vehicle transition for heavy-duty transport – including retrofit of existing fleet

Cumulative numbers of the heavy-duty EV vehicles to be added in the raw material and finished goods fleet transport



Category	Vendor
OEM	IPL Tech Olectra Volvo BYD Ashok Leyland Mahindra Evage TATA
Retrofit solution provider	Kalyani Volmac
Service Provider (OPEX)	Charge zone Switch Lab Moo EV

Progress on advanced technology adoption – Green Strategic Partnership



Dalmia Cement and FLSmidth of Denmark sign a MoU for cooperation in next generation cement technology towards building a sustainable future in presence of Danish Prime Minister and Indian Prime Minister in Copenhagen

Our partnerships, associations and climate disclosure platforms



BUSINESS AMBITION FOR 1.5°C



WE MEAN BUSINESS COALITION



Global Cement and Concrete Association



RACE TO ZERO

WORLD ECONOMIC FORUM



RE100 EV100 EP100



Caring for Climate



S&P Global

GNR 2.0