

## Adopting low-carbon cement is the first step towards sustainability

India has set an ambitious target to become a Developed Economy by 2047 with a GDP of US\$ 40 trillion. Given the infrastructure development's multiplier effect of 1.2-1.5X on a nation's economy, this colossal endeavour would not only reshape our physical landscape but also create huge-scale employment and economy-wide growth, besides significantly improving the quality of our daily lives. Amidst this mega transformation, the imperative is to create a resilient, smart, and green infrastructure through sustainable practices. Moreover, our commitment at the COP26 in November 2021 to be net zero by 2070 remains our lodestar, shining on critical milestones in this journey.

### The cementing factor in our dreams

Since we have set a target to cut the carbon emission intensity of its GDP by 33-35% by 2030, the cement industry, accounting for around 8% of the overall CO<sub>2</sub> emissions, must play a crucial role in addressing the impact of climate change. One critical aspect of sustainability within the industry is the adoption of low-carbon cement. This innovative material has a great cut carbon footprint compared to traditional cement, making it an essential component in mitigating the ecological impact of large-scale construction. Dalmia Bharat is a proactive force in advancing this sector's 'grey to green' transition.

### Towards sustainable, low-carbon cement

India's commitment to sustainability has led to a major shift in the procurement of cement. Though robust, conventional Ordinary Portland Cement (OPC) has a high carbon footprint due to its production process. Low-carbon or Blended cement offers a compelling choice over ordinary OPC cement for sustainable construction practices. It delivers a multitude of benefits:

**Lower Carbon Emissions:** Blended cement eliminates carbon emissions

compared to OPC using materials like fly ash, slag, or limestone. This is crucial as OPC clinker production is carbon intensive.

**Enhanced Durability:** Blended cement offers improved durability by fortifying concrete against chemical attacks, sulfate damage, and chloride penetration, leading to longer-lasting structures.

**Less Heat Generation:** Blended cement produces less heat during hydration, making it ideal for large-scale concrete projects where excessive heat can cause thermal cracking.

**Improved Workability and Pumpability:** Blended cement enhances the workability and pumpability of concrete, simplifying handling, placement, and finishing.

**Increased Long-Term Strength:** Blended cement's pozzolanic properties and denser particle packing contribute to greater long-term strength, ensuring the construction of robust and enduring structures.

### Sustainable procurement strategies

Our progress toward embracing sustainable, forward-thinking procurement strategies with several elements facilitates low-carbon cement. First, through policies and incentives, the Government actively encourages eco-friendly construction materials like low-carbon cement, especially in public infrastructure projects. A case study is the Noida International Airport – India's first net-zero energy-rated airport, meeting the four Indian Green Building Council sustainability targets.

Next, public-private partnerships promote sustainable practices within the infrastructure sector, exemplifying a joint responsibility. Third, substantial investment in R&D is yielding innovative and eco-friendly cement formulations, further propelling India's sustainable construction endeavours. The growing awareness within the construction industry and among stakeholders is driving the demand

for low-carbon cement, indicating a positive transition.

### Challenges and opportunities

Despite the increasing favourable momentum, some challenges persist – the notable being the higher cost of low-carbon cement versus traditional alternatives, which may discourage some users from embracing the shift towards sustainability. However, the long-term benefits, such as lower maintenance and ecological impact, outweigh the initial investment. Additionally, promoting innovation in sustainable cement production can reduce costs and increase availability. It gives India a unique opportunity to become the global leader in producing and utilising low-carbon cement.

### Low-carbon economy

Low-carbon cement is crucial to our infrastructure transformation journey, reducing carbon emissions, conserving energy, and contributing to the sustainability mission. By adopting innovative procurement strategies and investing in R&D, India is meeting its infrastructure needs and taking the lead in environmentally responsible construction practices, acting as a beacon of hope for a greener, more sustainable future. ■



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