



# WORLD SUSTAINABLE DEVELOPMENT SUMMIT 2022

**TOWARDS A RESILIENT PLANET:  
ENSURING A SUSTAINABLE AND EQUITABLE FUTURE**

February 16-18, 2022



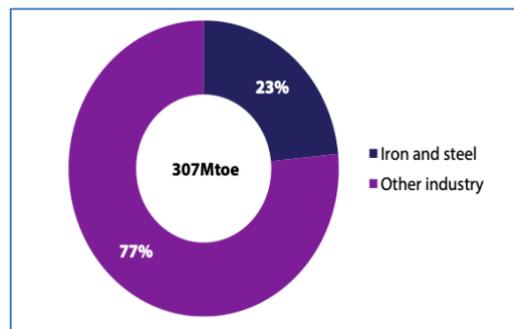
Industry Charter for  
**Near ZER Emission** by 2050



## Research and Innovation Outlook for Industry Decarbonisation in India 16 Feb 2022; 11:30 am to 01:00 pm (IST) | Virtual Hall: Chinnar

Industry contributes around 30 percent of the global CO<sub>2</sub> emissions. Indian industry has made important progress on energy and emissions reduction in the past, primarily through improving the energy efficiency of key industrial processes. This has helped industry to maintain competitiveness and reduce emissions. However, if long term sustainable growth is to be achieved in combination with global ambition to address climate change, more fundamental changes will be required to reduce emissions by 2050 and beyond.

India's industrial sector including heavy industry will continue to be a strong driving force behind the Indian economy over the next decade, growing rapidly out of 2030 and beyond. IEA scenario analysis predicts energy consumption of Indian industry as the end-use sector would grow from 36% to 41% by 2030 and industry would account for growth in emissions by 50% by 2040. Amongst industries, the iron and steel sector is the largest energy consuming sub-sector, accounting for over 20% of industrial energy use. Other sub-sectors which consume large amounts of energy in India are the brick, cement, petrochemical and fertilizer sectors. Together, all the three sectors, iron and steel, cement and fertilisers account for majority share of industry's primary energy demand.



**Figure 1: Iron and Steel Share of Energy Use, 2018-19**  
TERI's analysis using MOPSI (2019a)

These sectors *viz.* steel, cement and fertilisers have taken various steps to improve energy efficiency and adopt renewable energy. The cement and steel industry has taken initiatives like implementation of latest state-of-the-art clean technologies, raw material quality improvement, improving fuel efficiency, creation of carbon sink and others. The steel sector has achieved considerable reduction in the specific CO<sub>2</sub> emissions (in terms of tonnes per tonne of crude steel). Specific CO<sub>2</sub> emission has reduced from around 3.1 T/tcs in 2005 to around 2.5 T/tcs in 2020<sup>1</sup>. The Performance Achieve and Trade (PAT) scheme launched by Bureau of Energy Efficiency has already started to drive forward progress in improving energy efficiency, further efforts are required to incentive investments and finance requisite technologies. Fertilizer sector in India has witnessed significant improvements in energy efficiency and renewable energy.

However, there are several challenges for industry transitions. The low carbon technologies that are needed to decarbonise the industry are at various stages of development. We need to continue to innovate and develop a broad range of low carbon technologies to put us in a best position to reduce the cost of decarbonisation and maintain the competitiveness of industry while envisaging low carbon industrial growth going forward. TERI's analysis recommends inclusion of the following components to build sectoral decarbonisation roadmaps:

- Continued improvements in energy efficiency, whether that be near-term international benchmarks or future step-change technologies;
- Achieving a high degree of material circularity, understanding scope for material substitution and reducing material intensity where possible and;
- Developing longer-term technology roadmaps and collaborative RD&D programmes at the global scale for the hard-to-abate sectors and associated technologies.

The roadmaps for sectoral decarbonisation would depend on sound research and foresight and coordinated multistakeholder engagements. There is a need for major acceleration in R&D&D in breakthrough technologies that have the potential to significantly change industrial energy use or greenhouse gas emissions. Support of demonstration projects will be particularly important. The collaborative efforts of policy makers, industrial companies along with their supply chains, and research institutions can support innovation and the scale up of promising decarbonization technologies, which is required to reach full decarbonization of the industrial sectors, similar to the effort that led to the cost reduction and scale up of renewable energy generation.

#### **Key Questions for Panelists:**

1. How important is decarbonisation for your industry?
2. What are the steps that you have taken for decarbonisation? Provide examples of efficiency, renewables, CCUS, process modifications recycling that have been implemented / are being considered.
3. What are barriers to the adoption of low carbon options? How can these be overcome?
4. How will investments in low carbon affect the product price and the competitiveness of your industry?
5. How can we create new models for co-operation, R&D between industry and research organisations for low carbon?
6. Give one example of a futuristic low carbon project that your industry would be keen to pursue.
7. What should be the role of industry associations and Government in low carbon options for industry?

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<sup>1</sup> <https://steel.gov.in/technicalwing/energy-and-environment-management-iron-steel-sector>