इस्पात मंत्रालय
MINISTRY OF
STEEL

सत्यमेव जयते
Government of India

GREEN STEEL TAXONOMY FOR INDIA

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The taxonomy of green steel is a prerequisite for developing a policy for decarbonising the sector and creating demand for green steel.

It provides a common language and framework for producing low-carbon emission steel, differentiating the market for green steel from conventional steel and enabling its procurement.

Further, green steel taxonomy is essential for drawing in financial support and other incentives to produce greener steel. It is also important in fostering international collaboration and cooperation in advancing sustainable steel production and trade.

While the taxonomy of green steel is not a direct tool for reducing carbon emissions in the steel sector, it is a crucial enabler of the transition that supports 'push' and 'pull' factors for decarbonisation while fostering innovation, investment, and global collaboration for sustainable industrial transformation.

Taxonomy for Green Steel

1. **"Green Steel"** shall be defined in terms of percentage greenness of the steel, which is produced from the steel plant with CO_2 equivalent emission intensity less than 2.2 tonnes of CO_2e per tonne of finished steel (tfs).**The greenness of the steel shall be expressed as a percentage, based on how much the steel plant's emission intensity is lower compared to the 2.2 t-CO_2e/tfs threshold.**
2. Based on the greenness, the Green steel shall be rated as follows:

   Five-star green-rated steel: Steel with emission intensity lower than **1.6 t-CO_2e/tfs.**

   Four-star green-rated steel: Steel with emission intensity between **1.6 and 2.0 t-CO_2e/tfs.**

   Three-star green-rated steel: Steel with emission intensity between **2.0 and 2.2 t-CO_2e/tfs.**

   Steel with emission intensity higher than 2.2 t-CO_2e/tfs shall not be eligible for green rating.
3. The threshold limit for defining star rating of Green Steel shall be reviewed every three years.
4. The scope of emissions shall include Scope 1, Scope 2, and limited Scope 3, up to finished steel production. Scope 3 emissions shall include agglomeration (including sintering, pellet making, coke making), beneficiation, and embodied emissions in purchased raw materials and intermediary products, but shall not include upstream mining, downstream emissions and transportation emissions, both within and outside the gates of a steel plant.
5. Green star-rating of the steel of the registered steel plant shall be based on the emissions incurred till finished steel production stage with the limited scope-3 as described in Clause-3.
6. The National Institute of Secondary Steel Technology (NISST) shall serve as the nodal agency for measurement, reporting, and verification (MRV) as well as for issuing the greenness certificates and star ratings for the steel.
7. The certificate of the green-rated steel shall specify plant name, embodied emissions at finished steel level, greenness percentage at finished steel level, star rating of the steel and the quantity.
8. The methodology for emissions MRV, as published by BEE in the document 'Detailed Procedure for Compliance Mechanism under CCTS' in July 2024 (as amended up to date of certification), under Carbon Credit Trading Scheme (CCTS), as notified on 28 June 2023, shall be applicable.
9. Steel plants may register with NISST to obtain greenness certificates and star rating for their products.
10. For registry, a one-time amount of Rs 10,000 shall be charged per Steel Plant by the NISST.
11. For certification, an amount of Rs. 1,000 shall be charged for every 500 tonnes of Finished Steel certified.
12. The certificate shall be issued on yearly basis (financial year). In case the steel plants opt for MRV more frequently, then the certificate may be issued more than once in a year as per the requirement.
13. A registry of green-rated steel shall be maintained by NISST.

Technical explanation of Green Steel Taxonomy:

Consider that the CO_2 equivalent emission intensity of steel is represented on the y-axis. The lowest end on the axis (point A), indicated in Figure 1, represents net-zero emissions steel (E_0 = 0). The actual emission intensity of the plant (E_p) is represented at point B. Point C represents the emission intensity threshold (E_t) considered for defining greenness of steel. The emission intensity threshold is a fixed value of 2.2 t-CO_2e/tfs.

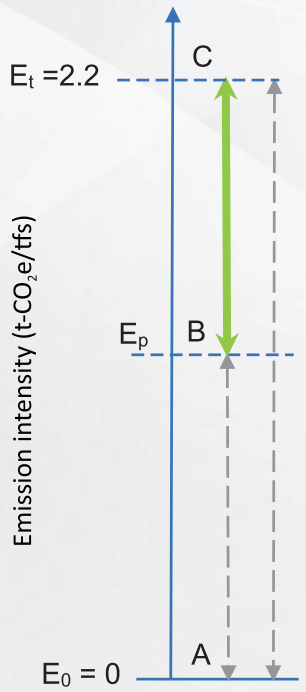

Figure 1

A steel plant with emission intensity (E_p) lower than the threshold emission intensity (E_t) shall be eligible for a greenness certification as explained below.

3) If $E_p = E_0$, then the plant can be considered to be producing 100% green steel.
4) If $E_p > E_t$, the plant is not producing steel with any greenness.
5) However, if $E_0 < E_p < E_t$, then the greenness percentage (G%) of plant can be defined as:

$$G\% = \frac{|BC|}{|AC|} \times 100 = \frac{|AC - AB|}{|AC|} \times 100 = \frac{(E_t - E_p)}{E_t} \times 100 = \left(1 - \frac{E_p}{E_t}\right) \times 100$$

$$or, \qquad G\% = \left(1 - \frac{E_p}{2.2}\right) \times 100$$

As an example, the green steel definition can be explained considering a steel plant having a CO_2 equivalent emission intensity (E_p) of 2.0 t-CO_2e/tfs. The greenness percentage (%G) of the total steel produced by the plant will be 9.1% based on the methodology indicated above. Therefore, as per the definition, the steel produced by the said plant will be 9.1% green.