ResponsibleSteel steelmakers reference group call on basis of the ResponsibleSteel GHG performance basic (level 1) threshold

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Housekeeping

- Observe antitrust issues
- Slides will be published on our website
- A recording of the webinar will be available to RS steelmaker members
- Please keep microphone on mute
- During Q&A, unmute for questions and comments or use chat box
- Chatham House rule: You can talk outside the meeting about issues raised, but please do not attribute any comments to individual speakers or organisations
Antitrust statement

ResponsibleSteel is committed to complying with all relevant antitrust and competition laws and regulations. Failure to abide by these laws and regulations can potentially have extremely serious consequences for ResponsibleSteel and its members, including heavy fines and, in some jurisdictions, imprisonment for individuals. ResponsibleSteel has therefore adopted an Antitrust Policy, compliance with which is a condition of ResponsibleSteel membership and participation. You are asked to have due regard for this Policy today and indeed in respect of all other ResponsibleSteel activities.
Agenda

The basis of the ResponsibleSteel GHG performance basic (level 1) threshold

- Introduction: Matthew Wenban-Smith, ResponsibleSteel GHG Lead
- CRU data modelling and results: Atul Kulkarni, CRU Senior Analyst
- Q&A
- Close
Process and timeline for approval of requirements

- **30 March – 27 May**
  - Members do final review and provide final feedback
  - ResponsibleSteel Team takes account of feedback and finalises requirements, consults with members as needed

- **28 May – 19 June**
  - Standards, Assurance and Claims Committee and full Board agree that requirements are ready to go to membership vote

- **20 June – 01 July**
  - All full members are asked to vote
  - Simple majority from both business and civil society needed

- **By 05 July**
  - Board ratifies requirements
## GHG requirements: overview

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Summary of Requirements</th>
<th>Must be met for ‘certified sites’</th>
<th>Must be met to sell ‘certified steel’</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>The corporate owner has published a science-based target to reduce the company’s GHG emissions in line with the achievement of the goals of the Paris Agreement</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8.2</td>
<td>The corporate owner is implementing the recommendations of the Taskforce for Climate-Related Financial Disclosures (TCFD)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8.3</td>
<td>GHG emissions are measured at the site level using a recognised international or regional standard</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8.4</td>
<td>Site level GHG emissions are measured from ‘cradle to crude steel’ following internationally consistent scope boundaries and GHG accounting rules</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>8.5</td>
<td>GHG emissions reduction targets are in place and are being implemented at the site level</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8.6</td>
<td>The site has achieved at least the ResponsibleSteel threshold level of performance for the GHG emissions intensity of its production of crude steel</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The GHG emissions intensity performance for the site is disclosed, tracking progress towards ‘near zero’ GHG emissions</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The product carbon footprint for all ResponsibleSteel certified products is determined and disclosed in line with a recognised international or regional standard</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
| 8.7       | Key site level information published on the ResponsibleSteel website, including:  
  • Site level GHG emissions data and decarbonisation target (may be averaged)  
  • Site level GHG emissions intensity performance data and performance level (may be averaged)  
  • Product level carbon footprint data available to customers | Site level emissions & reduction targets only | ✓ |
ResponsibleSteel GHG emissions intensity performance levels

- Variable threshold approach
- Basic (level 1) threshold is set initially at ‘better than current global average performance’, taking account of % scrap
• RS includes Scope 1, Scope 2 and upstream Scope 3 emissions (unlike First Movers Coalition, MPP/ETC and some others which exclude Scope 3).
  • Our upstream Scope 3 estimates include emissions from extraction/transportation of input materials (unlike e.g. ISO14404, EN19694, ACT and some others)
  • We also include greenhouse gases other than CO₂ – in particular CH₄ emissions which are significant for coal and natural gas extraction
• RS follows the worldsteel CO₂ methodology approach in treating process gases as in effect Scope 1 emissions, but in recognising ‘credits’ for their subsequent use for power generation (or CCU), whether this takes place on- or off-site.
• RS does not include emissions associated with processing/manufacturing downstream of crude steel production
• RS does not include offsets
CRU data set and linear regression

Linear regression:

\[ y = 2.4526x + 2.6858 \]

- 2,686 kg \( \text{CO}_2 \text{e/tonne} \) at 0% scrap
- 232 kg \( \text{CO}_2 \text{e/tonne} \) at 100% scrap
- RS threshold for 100% scrap is 300kg \( \text{CO}_2 \text{e/tonne} \) to allow for upstream emissions of transportation, plus a slightly flatter gradient as agreed in discussion with RS members.
ResponsibleSteel GHG emissions intensity performance levels
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Introduction to CRU’s Steel Cost Model and Carbon Module

- CRU’s proprietary Steel Cost Model is a comprehensive database of steel plants operating parameters, macro-economic and raw materials input costs. The model is global in coverage, with data for over 320 mills across 44 countries worldwide. The model provides an independent and standardised method of comparing CO₂ emissions.

- Coverage includes:
  - 172 BF/BOF sites
  - 148 EAF sites

CRU models the steelmaking process from raw materials preparation to the rolling lines. Granular data collected at each stage allows in determining cost and CO₂ emissions.

Process Coverage

- **Raw materials prep**
  - Sinter
  - Coke
  - Pellet

- **Ironmaking**
  - Blast Furnace
  - DRI Furnace
  - RHF
  - Corex Furnace

- **Steelmaking**
  - EAF
  - BOF
  - IF
  - Conarc
  - Secondary Steelmaking

- **Casting**
  - Billet
  - Bloom
  - Slab
  - Ingot

- **Rolling**
  - Long products
  - Sheet products
  - Plate
Steel Cost Model and Carbon Module – Methodology

- CRU has been modelling steel production for over 20 years. Our research uses a wide variety of sources, but primary data collection is the focus of our research. Our team of industry and technical experts ensures we have the knowledge to audit and analyse the data.
System Boundary for Regression aligns with the RS draft standard

System Boundary

Scope 3 Upstream – Indirect Emissions
- Iron ore
- Coal
- Limestone
- Natural Gas
- HFO
- Transportation
- Sinter
- Pellet
- Coke
- DRI/HBI
- Pig iron

Scope 1 – Direct Emissions
- Pellet plant
- BF
- Desulphurisation
- BOF
- Secondary Steelmaking
- Slab Casting
- On Site Power Plant
- Sinter plant
- DRI
- Coke oven
- EAF
- Billet Casting
- Coke
- Lime unit
- DRI/HBI
- EAF
- Bloom Casting
- O₂/ASU
- Natural Gas
- Limestone
- Ingot Casting
- Pellet
- Transportation
- HFO
- Transportation

Scope 2 – Indirect Emissions
- Purchased Electricity
Process Emissions Calculation - Scope 1 (Direct Emissions)

Scope 1: Process emissions

\[ \text{Scope 1: Process emissions} = \sum \left( \text{Carbon containing energy input rate} \times \text{Production} \times \text{Emissions Factor} \right) + \sum \left( \text{Electricity input rate} \times \text{Share of captive electricity} \times \text{Production} \times \text{Emissions Factor} \right) + \sum \left( \text{Flaring} \times \text{Production} \times \text{Emissions Factor} \right) - \sum \left( \text{Carbon containing output products} \times \text{Production} \times \text{Emissions Factor} \right) \]
Process Emissions Calculation - Scope 2 (Indirect Emissions)

CRU’s scope 2 emissions intensity calculation methodology:
Scope 2 emission intensity is calculated using the local grid/PPA (if known) or national grid fuel share and corresponding generator efficiencies of stationary power generation.
CRU’s scope 1+2+3 upstream emissions intensity calculation methodology for third party inputs:
For iron ore products such as sinter fines, pellet feed, lumps and coal products such as coking coal and PCI, Scope 1+2+3 CFR emissions intensity from CRU’s Iron Ore and Coal Cost Models are used.

For third party agglomerates and intermediate products such as Pellets, Coke, Pig iron and DRI, Scope 1+2+3 upstream emissions intensities from Steel Cost Model and for mining and transportation emissions upto third party site (Scope 1+2+3 CFR), CRU’s Iron Ore and Coal Cost Models are used.
Global CO$_2$ emissions intensity Regression Analysis

Regression Analysis for World
y-axis: CO$_2$ emissions intensity, t-CO$_2$/t-crude steel
x-axis: external scrap steelmaking charge, %

\[ y = -2.4207x + 2.6571 \]
\[ R^2 = 0.8944 \]

DATA: CRU Steel Cost Model and Emissions Analysis Tool
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Questions?

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Thank you