'ENVIRONMENTALLY SUSTAINABLE' TAXONOMY ELIGIBILITY CRITERIA

Introduction

The steel industry has been invited to participate in the Technical Expert Group (TEG) on Sustainable Finance, and has provided comments on the second round consultation. As yet these comments have not been considered in the latest draft, and so this paper sets out in further detail the concerns of the steel industry and workable proposals to improve the taxonomy.

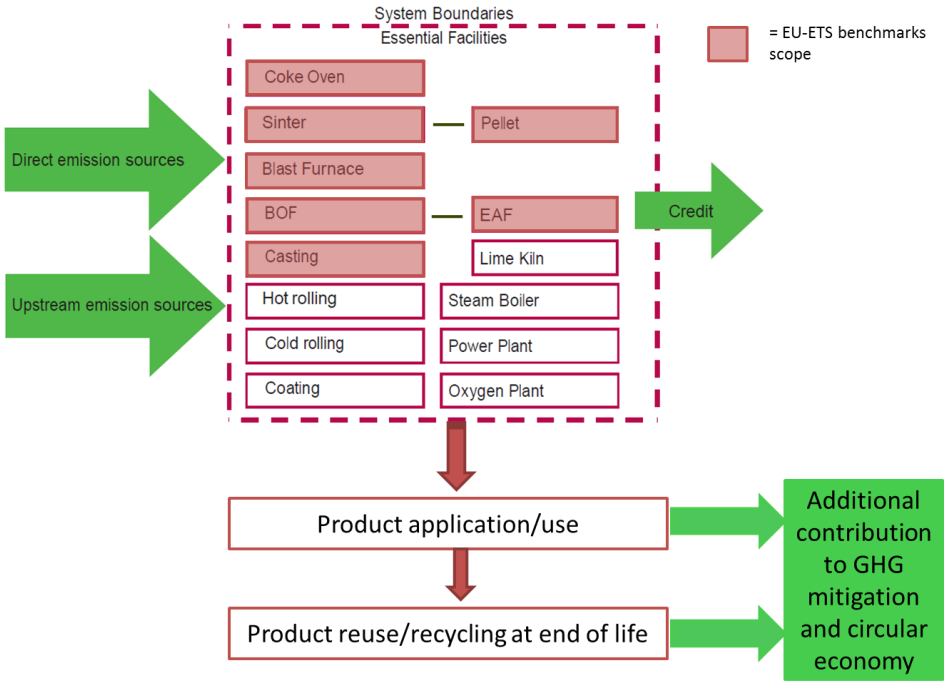
Description of Steelmaking processes in relation to the current taxonomy and eligibility threshold proposal

Steel is typically made via two process routes:

- Integrated Blast Furnace and Basic Oxygen Furnace (BOF) steelmaking utilising predominantly iron ore, coke, sinter or pellet and steel scrap as feed materials.
- Electric Arc Furnace (EAF) using predominantly steel scrap, as well as other iron sources such as Direct Reduced Iron (DRI), and in the case of high alloyed steel different ferroalloys.

For the integrated route in particular, there are several interlinked processes that have to be assessed together, since plant configuration, input materials and product mix have an influence on each process and how they interact. For example, the coke oven, blast furnace and BOF each generate different types of waste gas that can be used as a fuel in the power plant to generate electricity, but this depends on how much gas is used in other processes, such as hot rolling. To make matters even more complex all operations can be done on one and the same site or they can all be done on different sites. The steel industry has established a standardised method of calculating emissions in a consistent way. *Figure 1* shows the scope of processes needed to properly assess the CO_2 emissions of a steelmaking site, as indicated by the dotted line system boundary.

Figure 1: Schematic of iron and steelmaking processes included for CO_2 intensity evaluation and wider value chain over the lifecycle of steel products



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The CO2 emissions are assessed up to the point that a semi-finished product is produced, such as hot rolled coil, cold rolled coil, section, bar or rod. The shaded processes are the ones where there is an existing EU-ETS benchmark. Semi-finished steel products are then manufactured and fabricated into finished products in the packaging, transport, construction, energy and metal goods sectors. Figure 1 also depict the 'in use' phase and end of life phase of these finished products where innovative steel products contribute to significant CO_2 savings, and are also fully recyclable at end of life.

Why EU-ETS benchmark values are not suitable for evaluating the contribution to climate change mitigation of steelmaking activities

The current taxonomy metric threshold is to use the benchmark values for selected individual sub-processes. As can be seen in Figure 1, there are a significant number of processes not included in the ETS benchmarks for iron and steel, which makes the benchmarks unsuitable to assess the real performance of a steelmaking activity.

Benchmarks are set for the shaded processes in Figure 1, which are based on the average of the top 10% best performing processes in Europe. This means that 95% of the installations will have CO2 intensities higher than the level of the benchmark. Given that each site operates with different input material qualities and plant configurations, there is not one plant existing in Europe that achieves the benchmark value for all the benchmarked processes combined. This means that the use of EU-ETS benchmark as the threshold will rule out all steelmaking activities in Europe from qualifying as being environmentally sustainable. In addition, there are several other shortcomings with the use of EU ETS benchmarks:

1. Does not take account of different types or qualities of products produced by the steelmaking activity which may account for higher CO_2 emissions at one installation compared to another.
2. Does not account the performance that can be achieved relative to the actual plant configuration.
3. Does not account for the CO_2 mitigation that occurs in other sectors as a result of using steel industry by-products in applications like fuel, cement, fertilizer and aggregates.
4. Wider CO_2 mitigation and circular economy contribution during use and end of life of steel products is not taken into account.

1. Alternative to EU-ETS benchmarks – EN 19694

European Standard EN 19694, Stationary source emissions — Determination of greenhouse gas (GHG) emissions in energy-intensive industries. This includes a series of standards that consists of the following parts:

Part 1: General aspects

Part 2: Iron and steel industry

Part 3: Cement industry

Part 4: Aluminium industry

Part 5: Lime industry

Part 6: Ferroalloy industry

This standard published in 2016 has been prepared under a mandate M/478 given to the European standardisation body CEN by the European Commission and the European Free Trade Association.

To quote Part 2 of the standard: "This European Standard deals with sector-specific aspects for the determination of greenhouse gas (GHG) emissions from steel production. This standard can be used to measure, report and compare the GHG emissions of a steel facility. It can also be used to assess the GHG performance of a steel facility or parts of it."

Of particular relevance is that the EN standards additionally allows comparison of installations by setting a benchmark based on the average of the best 25% performing individual sub-processes, but at the same time, taking into account the configuration of each individual installation. The CO_2 intensity calculated according to EN 19694- part 2 can readily be used as the metric for every product or semi product, which is not the case with the EU-ETS benchmarks, and the threshold can be set relative to the 25% best performance benchmark calculated. The calculation tool is freely available (see http://www.eurofer.eu/Sustainable%20Steel/CO2%20Standard.fhtml) and covers all the sub-processes listed within the system boundary in Figure 1.

Matric: GHG emissions per unit of production ($kgCO_2/t$)

Threshold Options:

- Qualitative
  a. an activity is in the process of transformation towards CO_2-emission lean operating modes (Article 14)
- Quantitative
  a. GHG emissions per unit of production (kgCO2/t) according to EN 19694- part 2, within XX% of the optimum threshold (based on top 25% of installations), or has firm plans to do so.

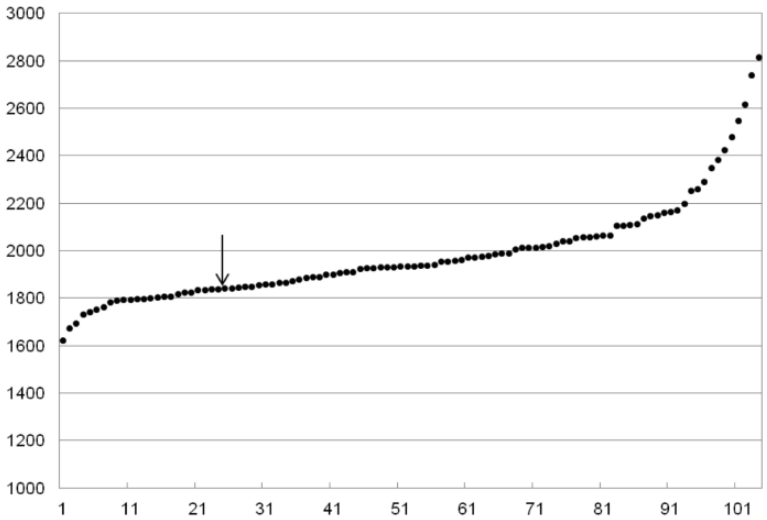

Figure 2 — Distribution curve for CO_2 intensity of iron making (kg CO_2 per tonne of product) – example for illustration taken from EN 19694- part 2

It is also important to have separate threshold values for the two production routes – integrated BF/BOF and EAF, since the NACE code 24 is at a too high level of aggregation. In addition, the NACE code 25.61 (coating) may need to be included in the scope to align with EN 19694 – part 2.

2. Assessing the additional contribution to climate change mitigation, and other environmental metrics, by including the lifecycle of the value chain

Steel is an essential material for low carbon manufacturing and technology, and without steel the climate change mitigation in many other sectors could not be realised. Therefore the whole supply chain has to be recognised as being 'environmentally sustainable' in order for the low carbon activity to be fully supported, as one part cannot exist without the other. Examples of steel as an enabler to low carbon manufacture and technology include:

- Use of Advanced High Strength Steels (AHSS) to reduce the weight of vehicles in the transport sector and therefore reduce fuel consumption and CO_2 emissions
- The use of grain-oriented electrical steel in transformers to minimise power distribution losses.
- The use of high alloyed steel like stainless steels for corrosion protection, thus multiplying the service life of an installation or product and reducing maintenance.
- The use of steel in key infrastructure such as high speed rail, bridges and tunnels, enables faster transport links, which can reduce the amount of driving and flying.
- Steel is an essential material for renewable energy technologies such as wind, tidal, solar and wave power.
- The production of steel also produces valuable by-products that are used in other sectors, which contributes to the reduction of natural resource use and emissions in those sectors.
- Steel is a highly recycled material, contributing to a more circular economy and saving CO_2 from recycling by reducing the need for primary material.

Metric: Demonstrate substantial emission reductions through product innovations, which deliver savings during their application as part of the whole value chain, and can be calculated in a life cycle carbon footprint or Life Cycle Assessment according to ISO 14044. Product Environmental Footprint (PEF) or Organisational Environmental Footprint (OEF) can also be used.

Threshold Options:

- *Qualitative*
    a. The activity makes products that are used in low carbon technologies and other activities that help deliver significant CO_2 savings through their use, and are reusable or recyclable at end of life.
- *Quantitative*
    a. Life Cycle Assessment or carbon footprint is available showing significant GHG mitigation, and other environmental benefits, through product use and end of life.
        i. Benefit of product innovation over the lifetime vs. baseline option
        ii. Overall benefit of renewable energy or other low carbon technology that cannot function without steel.
        iii. Benefits of recycling can be calculated by the difference in emissions and resource use between primary production and secondary production. Threshold can be % of CO_2 or impact saved from recycling relative to production.

A steelmaking activity can be assessed to be eligible as environmentally sustainable if the CO_2 intensity metric (1.) or the additional value chain contribution metric (2.) can be satisfied.