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Performance Classes for Steel Intermediate Products:

Under the Ecodesign for Sustainable Products Regulation (ESPR)

BRIEF
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DISCLAIMER

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Summary

The draft performance classes for steel under the Ecodesign for Sustainable Products Regulation proposed by the European commission risk creating a label that legitimises the status quo rather than driving the transition to genuinely low-carbon steel. By calibrating the upper classes to current market distributions instead of near-zero technology performance, the proposed framework could classify much of the steel already sold on the European market as high performing, **thereby weakening the effectiveness of public procurement as a driver of lead markets and undermining incentives for first movers.** A credible framework should instead reserve the top class for breakthrough performance, tighten thresholds over time, and calibrate them to the European market. More specifically, the **following recommendations outline the main changes needed to ensure that the classification supports, rather than weakens, the transition to low-carbon steel:**

- **Anchor class thresholds to technology performance levels, not market volume shares**. Set Class A based on demonstrated best-available decarbonisation technology; accept a near-empty Class A as a feature.
- **Include a binding progressive tightening mechanism in the delegated act**, requiring that class boundaries are tightened at each periodic review in line with demonstrated technological progress, EU climate targets, and the pace of breakthrough deployment, ensuring the system drives continuous improvement as required by the ESPR.
- **Recalibrate to the EU market.** The distribution underpinning the thresholds should reflect products placed on the EU market, as the ESPR governs. Global production data is not a sound basis for an EU product label.
- **Replace CBAM default values** with actual verified emissions data from CBAM transitional reporting or, at minimum, the JRC's own best-estimate country-average intensities.
- **Set a safety mechanism such as emissions ceilings** to ensure a steel plant receives a better rating only when it becomes cleaner itself, not because other plants elsewhere perform worse

Context

In 2025, the European Commission proposed an EU steel label to make the carbon intensity of steel products easier to compare and to help create lead markets for low-carbon steel [1]. However, turning this idea into a credible and widely accepted regulatory tool proved politically and methodologically difficult. Although the Commission first announced that the Industrial Decarbonisation Accelerator Act (IAA) would introduce a voluntary carbon-intensity label for industrial products, starting with steel [1], the proposal was postponed several times before it was published on 4 March 2026 [2]. When it finally appeared, it no longer included the planned voluntary steel label. Instead, the definition of low-carbon steel was shifted to product-specific rules under the Ecodesign for Sustainable Products Regulation (ESPR) [3]. Shortly afterwards, the technical work resurfaced in the Joint Research Centre (JRC) preparatory process under the ESPR, which published draft environmental performance classes for five representative iron and steel intermediate products on 1 April 2026 [4].

A key reason for this difficult process is the disagreement among European steel producers and other stakeholders over how such a label should be designed. The main dispute concerns the sliding scale, a method that adjusts emissions thresholds according to the share of steel scrap used, so that primary and secondary steel can be assessed in one system. This approach is often linked to the International Energy Agency (IEA) definition of near-zero and low-emissions steel and has since been used in initiatives such as ResponsibleSteel and the Low Emission Steel Standard (LESS), which was, for example, developed in a stakeholder process led by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) [5]. Supporters argue that this method makes the blast furnace-basic oxygen furnace (BF-BOF) and electric arc furnace (EAF) routes more comparable and better rewards complex decarbonisation efforts in primary steelmaking [6]. Critics, especially from the circular and EAF-based steel value chain, argue that it weakens the climate benefit of recycled content, does not sufficiently recognise already low-emission secondary steel, and may distort competition [7].

Besides the debate over how the label should be designed for the steel market, the regulatory choices made for steel may also have implications far beyond this single product group, because steel is the first intermediate product category to go through the ESPR delegated act process. The choices of regulation design made on methodology, thresholds, and calibration will establish the template for the subsequent product groups. Getting it right is, therefore, not only a steel-sector concern; it is a regulatory precedent that will shape the ESPR's credibility as a sustainability instrument.

Bellona recognises the rigorous, sci-

> **A poorly calibrated steel label will not accelerate the transition - it will legitimise existing production patterns while weakening incentives for genuine emissions reductions.**

entifically-grounded work of the JRC in developing a draft of performance classes for steel intermediate products under the ESPR. The methodological framework of an absolute product carbon footprint (PCF) metric in tCO_2eq/t, product-specific scales across five representative products, and universal thresholds, is a transparent design choice. The JRC's Reference Installation Scenarios and life-cycle modelling provide an invaluable empirical basis on which further calibration approach could build, and the expansion to Scope 3 emissions for site-level data is commendable. Our main concern is with how the class boundaries are calibrated, and the consequences of that calibration for the system's ability to fulfil its legal purpose under Article 7 of the ESPR, of ensuring classes of performance correspond to meaningful improvements. The preparatory report covers five different intermediate steel products. For reasons of simplicity, this report will focus primarily on the case for Hot Rolled Coil (HRC).

The JRC proposal: A Classification System that does not differentiate between low- and high-emission steel in Europe

The JRC proposes thresholds (Classes A to E) for hot rolled coil (HRC) and other products, with an ESPR cutoff threshold for Green Public Procurement (GPP) encompassing Classes A+B. The methodology calculates process, electricity and upstream emissions (Scope 1, 2, and 3) and places Class A at ≤1.79 tCO_2eq/t HRC and Class B at 1.79-2.66. The methodology is calibrated so that Classes A+B together capture ≥30% of global production volume, following a Gaussian-like distribution under Method 3 (fixed percentage allocation) from Senatore et al. [9].

The difficulty is that on the EU market, where approximately 70-73% of steel consumption is domestically produced [10], the JRC's own Reference Installation Scenarios for HRC seemingly show that all examined EU BF-BOF plants fall within Class B (EU base case: 2,207 kg CO_2eq/t; ETS 10% best: 2,042) and all EU EAF production falls within Class A [4]. The result is a label where the vast majority of European steel available to a procurer or buyer is already rated A or B. The system cannot fulfil the ESPR's objective of ensuring "the removal of the worst performing products from the market and [...] gradually [moving] to the best performing products" (Preamble 24) or the requirement under Article 7(4) that "classes of performance shall correspond to significant improvements in performance levels," because there are no significant improvements left to signal within the top two classes.

This outcome is driven by three methodological choices:

1. Calibration to global production volume rather than the EU market.

The CRU dataset [11] used by the JRC covers worldwide steel production. The ESPR, however, governs products placed on the EU market. The JRC's own study title references "products placed in the EU market" yet the thresholds are set against a global distribution that is pulled upward by high-emitting non-EU installations (e.g. South African BF-BOF steel with 6.5 tCO_2eq/t HRC, see Figure 1) with limited relevance for the EU's product mix. A label calibrated on global data for a regulation governing the EU market makes all EU production appear better than it would be appropriate for the purposes of the classification.

2. The 30% volume target for A+B. This is not required by the ESPR.

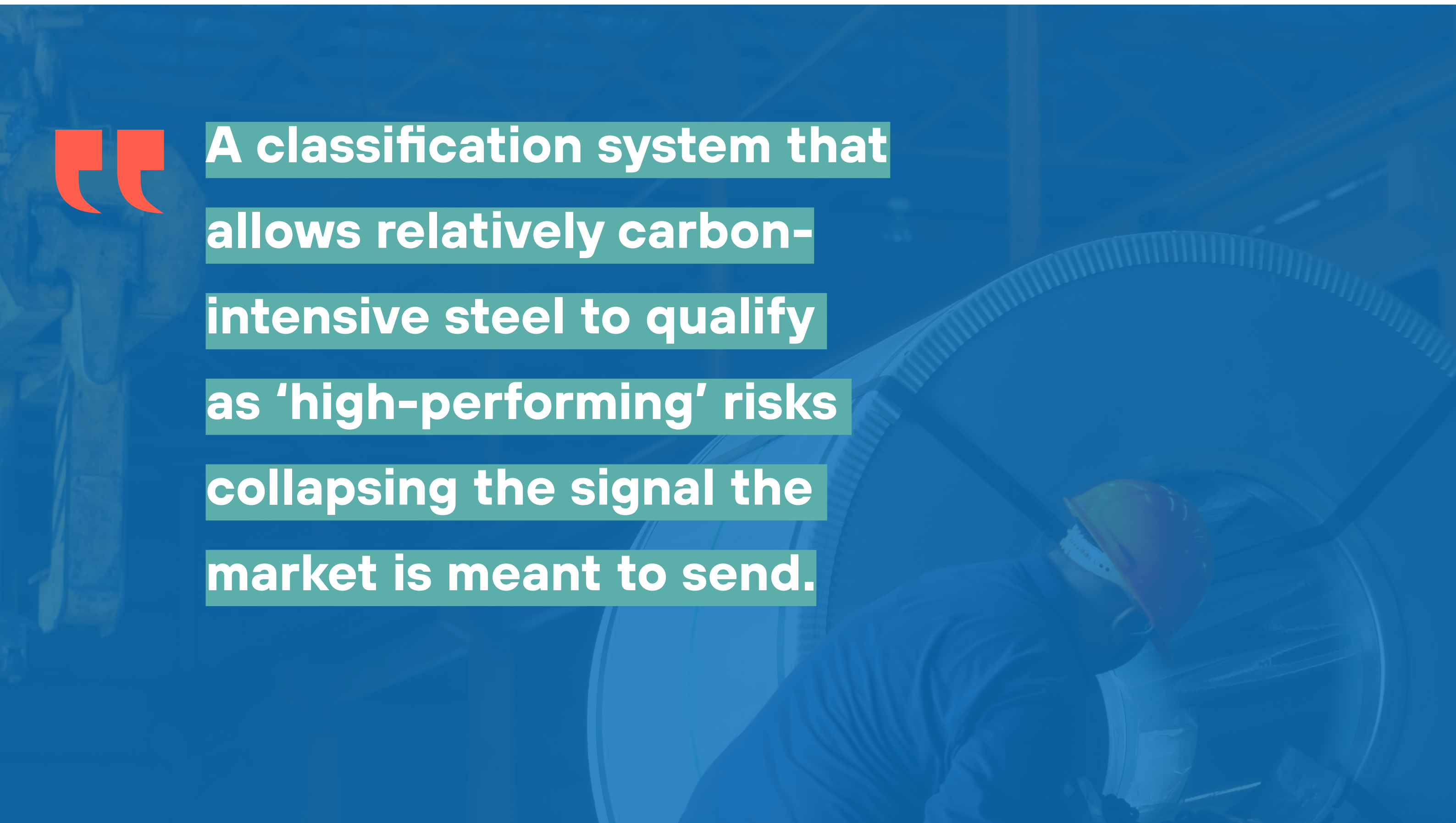
The Senatore et al. methodology [9] offers three methods, however, none mandates a specific volume share. The 30% criterion is justified by reference to GPP market availability, but this conflates two distinct functions: ensuring adequate supply for procurement (a concern at the B/C boundary) and signalling genuine best-in-class performance (the function of Class A). There is no procurement reason for Class A to be populated at all, nor for 30% to be considered the adequate amount for a 'critical mass' of supply.

3. The use of CBAM transitional-period default values for non-EU installations.

These are penalty values that are deliberately conservative worst-case figures designed to incentivise importers to report actual verified data. The JRC confirmed at the 13 April stakeholder meeting that it does not have access to verified CBAM data and cannot disaggregate production data by EU import volumes. Using these defaults as representative of actual import performance systematically inflates the right tail of the distribution, artificially widening the range and making the 30% A+B target appear to be a meaningful constraint.

International comparison with other steel labels

As a result of this methodology, Figure 1 illustrates how unambitious the proposed EU approach to steel classification for HRC would be compared to existing international public and private schemes. Under the IAA proposal, 25% of publicly procured steel in the selected sectors would have to qualify as "low-carbon" by 2030 [8], with the stated aim of creating a lead market for low-carbon steel. Combined with the JRC GPP methodology, which defines "green products" as those in the two highest performance classes [13], this risks turning a relatively weak classification into the effective benchmark for green public procurement. The comparison with other labelling systems (see Figure 1) shows that the EU framework would define "high performance" far more loosely, thereby weakening incentives for investments in green steel. It also creates the risk that steel rated, for example, only as class D under the Chinese system could still qualify as class A in Europe because the proposed EU thresholds are significantly less stringent (Figure 1). It should also be noted that for steel companies making costly decarbonisation investments, the proposed framework risks undermining the business case for early movers, because it does not sufficiently distinguish genuinely low-carbon steel from less ambitious production pathways in the market.



> **A classification system that allows relatively carbon-intensive steel to qualify as 'high-performing' risks collapsing the signal the market is meant to send.**

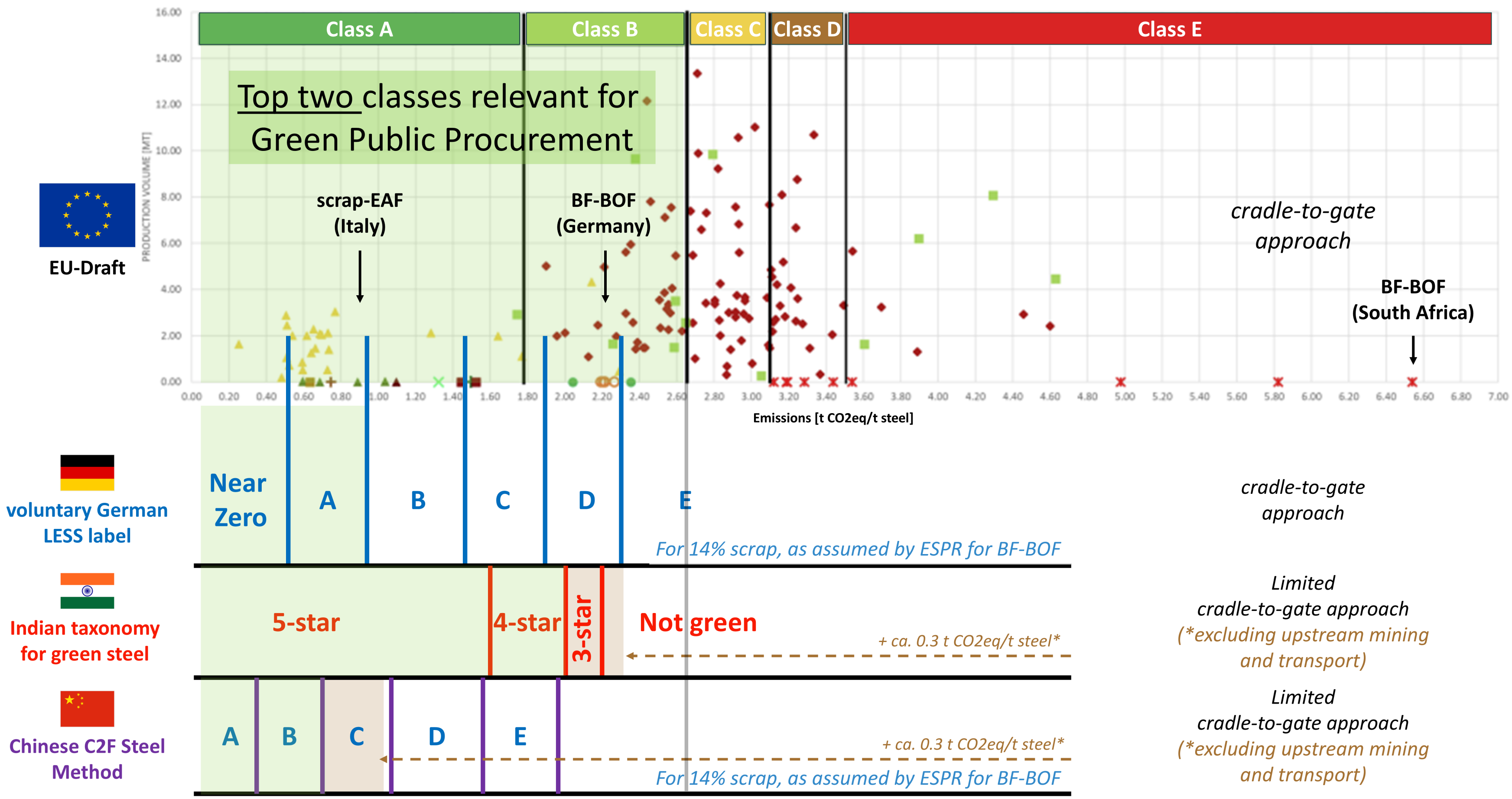


Figure 1. Classes of environmental performance defined by the ESPR (Draft from April 01, 2026) for HRC in comparison to other steel labels [4,5,14–16].

Discrepancy between Objectives and Methodology

These methodological choices reflect a deeper design tension. The JRC study delivers a rigorous measurement system, and its analytical quality is not in question. But the ESPR does not only require a sound analysis of the status quo – it requires market signalling for future low-emission steel. The current system tells the market who is cleaner today. It does not meaningfully direct the market towards where it must go to reach the EU climate goals. Four structural features compound this problem:

The classification is anchored in the present, not the transition pathway: Despite including future technology scenarios in its Reference Installation Scenarios, the thresholds are functionally derived from current production distributions constrained by what already exists at scale. Breakthrough technologies such as H_2-DRI-EAF on 100% renewable electricity are not required to define Class A; they merely fall within it alongside conventional scrap-EAF plants on grid-average power. The JRC showed in their 13 April stakeholder meeting that incremental improvements to existing BF-BOF operations are sufficient to climb from Class C to B or even A. The system rewards incrementalism and distances itself from the decarbonisation challenge for the industry, which is the opposite of the "clear and measurable incentive for continuous improvement" the JRC study describes as a defining feature of its own framework [4]. This stands in contrast to other EU regulatory instruments that lead the market: EU CO_2 emission standards for vehicles set g CO_2/km limits derived from climate targets, not from the current fleet distribution [17]. Also, the EU energy labels under Regulation (EU) 2017/1369 were deliberately rescaled with empty top classes to pull manufacturers beyond the status quo [18].

Route neutrality becomes outcome neutrality: The draft study emphasises product-specific scales and fairness between BF-BOF, EAF, and DRI routes through a scale measured in emissions intensity, open to any production pathway. But route neutrality in threshold expression should not extend to neutrality in ambition signals. Not all steelmaking routes are equally compatible with net-zero trajectories. Unabated BF-BOF is structurally high-emitting: the JRC's own RIS show EU BF-BOF base-case performance at 2,207 kg CO_2eq/t for HRC, with even the best 10% ETS installations at 2,042, both comfortably within Class B [4]. A classification that accommodates all routes within its upper classes without clearly differentiating transition-compatible pathways limits its utility in further policy development.

Misleading lead market policy: The JRC study frames classes of performance as primarily informational and periodically updated. In practice, these classes will directly determine eligibility for Green

Public Procurement, state aid, and the lead market provisions. The Industrial Accelerator Act (IAA) proposal references the ESPR delegated act for the implementation of lead market measures for steel (Article 10 in [3]). The ESPR itself stipulates that Member States' incentives "should target the top two populated classes of performance" [4]. The B/C threshold therefore becomes the de facto regulatory definition of "green steel" for procurement purposes. A threshold set where the vast majority of coal-based EU steel already qualifies produces low selectivity and correspondingly weak demand pull for breakthrough decarbonisation. "Green" public procurement will stay grey in practice.

Risk of locking in a low-ambition baseline. If adopted as proposed, the classification could legitimise conventional BF-BOF performance as "high-performing" in the EU's own regulatory framework, reducing the urgency for hydrogen-based steelmaking, renewable electricity deployment for EAFs, and the broader industrial transformation the ESPR is intended to drive. Because this classification will shape procurement decisions, influence investment allocation, and anchor the IAA's lead market instruments, this is not merely a technical classification question but a capital allocation signal. A system that tells investors and procurers that the steel sector is already largely "green" undermines the business case for the first movers the Clean Industrial Deal [19] and the Competitiveness Compass [20] explicitly seek to reward.

Bellona's Recommendations:

Design options for the ESPR steel label

We propose that the JRC consider a series of methodological options to address the outlined issues hindering the transformation of the European steel sector.

When the EU rescaled energy labels under Regulation (EU) 2017/1369, Classes A and B were deliberately left empty or nearly empty [18]. The empty top class was the central design feature: it created visible aspiration pull, drove manufacturer competition, and signalled to investors where sustainable technologies could go. In contrast, the JRC argued at the stakeholder meeting that an empty Class A would stay empty for a long time because steel moves slowly. This is, however, precisely the argument that was implicitly rejected during the energy label revision.

If the JRC and European Commission choose to retain the current PCF-based methodology, they should only do so by replacing the volume-based calibration logic with thresholds informed by demonstrated technology performance levels and climate-compatible trajectories. The change is in what the thresholds are calibrated to, namely the technology performance frontier rather than today's market volume distribution.

Bellona proposes the following methodological recommendations for the JRC methodology:

1 Anchor PCF class boundaries to climate-compatible trajectories, not market distributions

The IEA's Net Zero by 2050 Roadmap [21] and the Achieving Net Zero Heavy Industry Sectors in G7 Members [22] define near-zero emission steel at ≤0.4 tCO_2/t crude steel (0% scrap) to ≤0.05 tCO_2/t (100% scrap). The SBTi Steel Science-Based Target-Setting Guidance [23] establishes separate 1.5°C-aligned decarbonisation pathways for ore-based and scrap-based production. The industry-backed Mission Possible Partnership outlines possible scenarios for reaching net zero in the steel sector via absolute emissions trajectories [24]. These existing sectoral frameworks define what near zero-aligned steel looks like by 2030 and 2040; the ESPR classification should reflect this trajectory rather than describing today's market.

Class A should be reserved for near-zero and breakthrough steel only, with an indicative threshold consistent with H_2-DRI-EAF (100% Renewable Energy) and scrap-EAF (100% RE) performance as modelled in the JRC's own Reference Installation Scenarios. The JRC's H_2-DRI (100% RES) scenario for HRC yields approximately 0.635 tCO_2eq/t [4] This should define the frontier, not sit within a broad band that also contains conventional scrap-EAF on grid-average electricity.

Class A may be empty or nearly empty initially – as a feature, not a flaw. HYBRIT, Stegra, Hydnum, Blastr, and frontrunner EAFs across Europe demonstrate that the near-zero steel frontier is not decades away but will be entering commercial-scale operation within this decade. An empty top class creates a clear innovation target and a strong signal for investors, public procurement, and industrial policy consistent with the IAA's stated objective to create lead markets for low-emissions steel.

2 Introduce a binding progressive tightening mechanism

The JRC study notes that "under the ESPR, classes of performance are reviewed periodically, allowing thresholds to evolve in line with technological developments and market realities." However, the current proposal contains no mechanism ensuring that thresholds actually tighten over time or a binding minimum review cycle frequency.

The delegated act should include a binding provision requiring that class boundaries are progressively tightened at each review cycle. Due to the urgency of the industry's transition, there should either be initially a higher frequency of reviews (at least every 5 years) to ensure objectives are being met, or preferentially, a higher ambition from the start to provide adequate incentives. The tightening rate for each class could be determined by reference to three elements: the observed rate of improvement in best-available technology as documented in the JRC's own Reference Installation Scenarios; the sectoral trajectory required under EU climate law (including the 2040 target of -90% GHG and the 2050 climate neutrality objective [25]); and the pace of commercial deployment of breakthrough technologies (H_2-DRI, CCS-equipped BF-BOF, fully renewable EAF). These elements together provide a transparent, evidence-based basis for setting tightening rates at each review, converting what is currently a discretionary option into a structural commitment to continuous improvement.

3 Calibrate with respect to the EU market

The distribution underpinning the thresholds should reflect products actually placed on the EU market, as the ESPR governs.

Apply a targeted calibration for EU-market thresholds for EU policy instruments (GPP criteria, state aid eligibility, IAA lead market provisions), with global benchmarking retained optionally for transparency and international comparability. This prevents the overqualification of EU production, where most domestically produced steel falls into Classes A+B - not because it is genuinely best-in-class but because the comparison set is inflated by non-EU overall production values. The IAA proposal itself requires that lead market provisions take "into account the different decarbonisation efforts and characteristics of primary and secondary steel producers" [3]. Provisions that do not differentiate within the EU market cannot fulfil this function.

4 Remove penalty-based data proxies

Replace CBAM default values with verified emissions data. CBAM transitional-period defaults are penalty figures designed to incentivise importers to report actual data – they are not performance data and should not be treated as such. Until verified plant-level CBAM data becomes available in the definitive phase, the JRC's own best-estimate country-average intensities from the RIS modelling could be used as the reference for non-EU production.

5 Introduce a fixed maximum emissions threshold between Classes C and D

A steel product should move into a better class only when its own emissions improve. To ensure this, the classification should include a clear absolute threshold between Classes C and D. For hot rolled coil, a threshold of 2.2 tCO_2eq/t could serve as a conservative safeguard (BF-BOF EU base case according to [4]), ensuring that clearly high-emitting steel does not move into the higher classes simply because the overall market changes in a worse direction. This would help ensure that higher class ratings reflect real emission reductions rather than shifts in the market benchmark.

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