TransitionAsia

ACCELERATING EAST ASIAN CORPORATE CLIMATE ACTION

# JAPANESE ELECTRIC ARC FURNACE STEEL:

## A MARKET READY FOR LOW-CARBON GROWTH

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# OUR TEAM

**Head of Impact**
Lauren Huleatt lauren@transitionasia.org
**Japan Analyst**
Kenta Kubokawa kenta@transitionasia.org
**ESG Junior Research Fellow**
Akira Kanno akira@transitionasia.org

# ABOUT TRANSITION ASIA

Founded in 2021, Transition Asia is a Hong Kong-based non-profit think tank that focuses on driving 1.5°C-aligned corporate climate action in Asia through in-depth sectoral and policy analysis, investor insights, and strategic engagement. Transition Asia works with corporate, finance, and policy stakeholders across the globe to achieve transformative change for a net-zero, resilient future. Visit transitionasia.org to learn more.

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# KEY TAKEAWAYS

1. Around a quarter of steel production in Japan comes from the Electric Arc Furnace (EAF) production pathway, with over 30 large scale and niche producers making a diverse range of products. Following other mature markets such as the USA, this segment of Japan's steel production is primed to expand domestically produced low carbon steel.

2. Green steel brands from EAF steel producers are now emerging. The potential for genuine low carbon steel solutions from EAF steel producers that can keep production in Japan and can navigate international carbon taxes. To the sector's benefit, these are not controversial balance products.

3. Scrap-EAF using renewable electricity is the key national pathway for the short term decarbonisation of the steel sector. Japan is below global averages and above targets like the IEA's for low carbon steel from EAFs highlighting the need for further reductions in carbon intensity. The EAF pathway needs more profile and recognition in public policy to fund and stimulate this.

4. Policies that support EAF capacity and these producers are lacking, with policies focusing on decarbonisation favouring larger integrated producers. Whilst most of these polices target blast furnace decarbonisation, even the small amounts of government support allocated to EAFs see the larger players benefit, illustrated by the subsidy for JFE Steel's 2 mtpa EAF at its West Japan Works plant in Kurashiki.

# INTRODUCTION

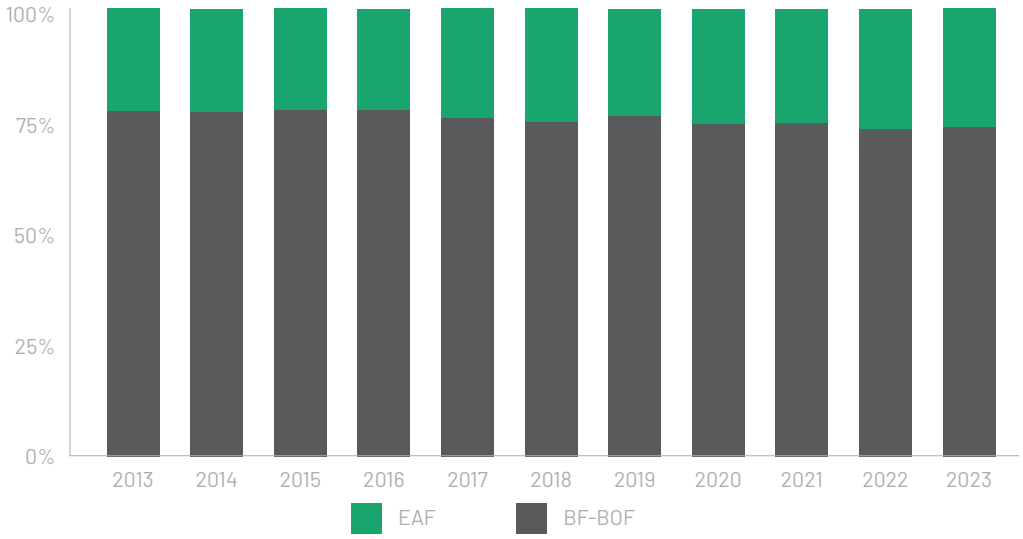
With Electric Arc Furnace (EAF) steel production representing the key global and national pathway for the short term decarbonisation of the steel sector, this report explores the market landscape, feedstocks, decarbonisation potential and product marketing in Japan.

## PRODUCTION VOLUME OF EAF STEEL MANUFACTURERS

In Japan, the proportion of EAF in crude steel production has remained steady and significant at around 25% for the past 27 years.[1] The country is home to approximately 31 EAF steel manufacturers of which the majority are small and medium sized enterprises, alongside the larger integrated steel producers whose output is dominated by the Blast Furnace-Basic Oxygen Furnace (BF-BOF) route.

The top five EAF steel producers—Tokyo Steel, Kyoei Steel, Godo Steel, Nakayama Steel Works, and Yamato Steel—collectively contribute approximately 10% of Japan's total crude steel output. This figure is comparable to the production volume of Kobe Steel, one of the major BF-BOF steel manufacturers. Combined, the total production from all EAF steel manufacturers rivals that of JFE Steel, the second-largest crude steel producer in Japan.[2]

*Figure 1: The Proportion of BF-BOF and EAF in Crude Steel Production, 1997–2023*




*Source: The Japan ferrous raw materials association*[1]

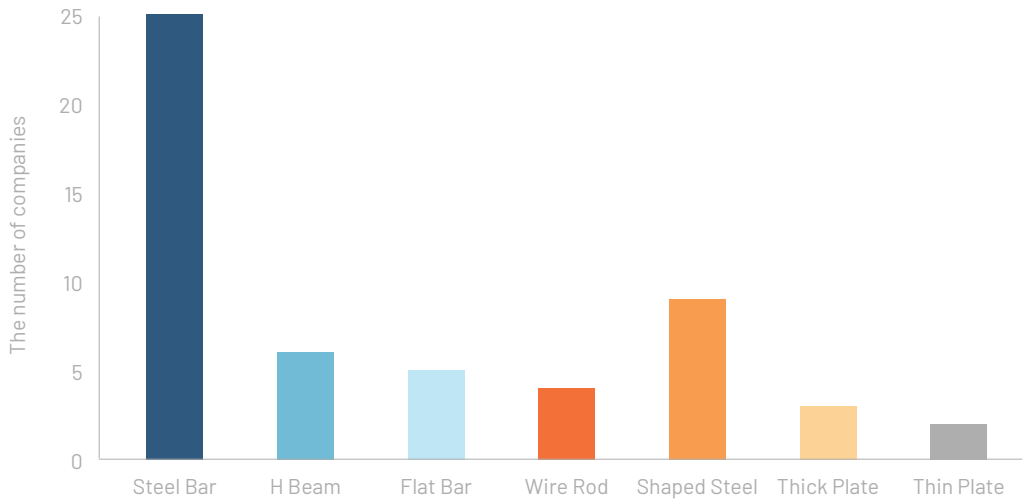
In terms of pipeline capacity, the headline development is JFE Steel's build of an 2 mtpa EAF at its West Japan Works plant in Kurashiki. It will invest an estimated JPY329.4 billion ($2.1 billion) and will receive government funding of up to JPY104.5 billion.[3] It will be able to produce high quality plates but will not be commissioned until FY2027. In this context, Japan has limited EAF capacity in construction at present. Just 0.1 mtpa compared to 14.2 mtpa in the rest of the G7.[4]

A comparison to the US provides a useful reference for Japan as another major steel market that has passed peak steel. The US has been responding to declining BF-BOF production as it switches to EAF steel production. EAF market share has risen to over 68%, with production remaining resilient at over 56 mtpa. Additionally, between 2023 and 2025, more than 16 mtpa of EAF capacity are expected to come online by the end of this year.[5] [6]

## TYPES OF STEEL PRODUCT

The range of steel products varies by manufacturer.[7] Core products, such as Steel Bars and H Beams, are primarily used in the construction sector, with the EAF production pathway accounting for a significant share of the market in Japan—98% for steel bars and 61% for H-beams in FY2018. In the same fiscal year, the total order volume was 7.3 million tonnes for Steel Bars and 3.7 million tonnes for H Beams.[8]

***Figure 2: Types of Steel Product by EAF Steel Manufacturers***




*Source: Tokyo Steel*[7]

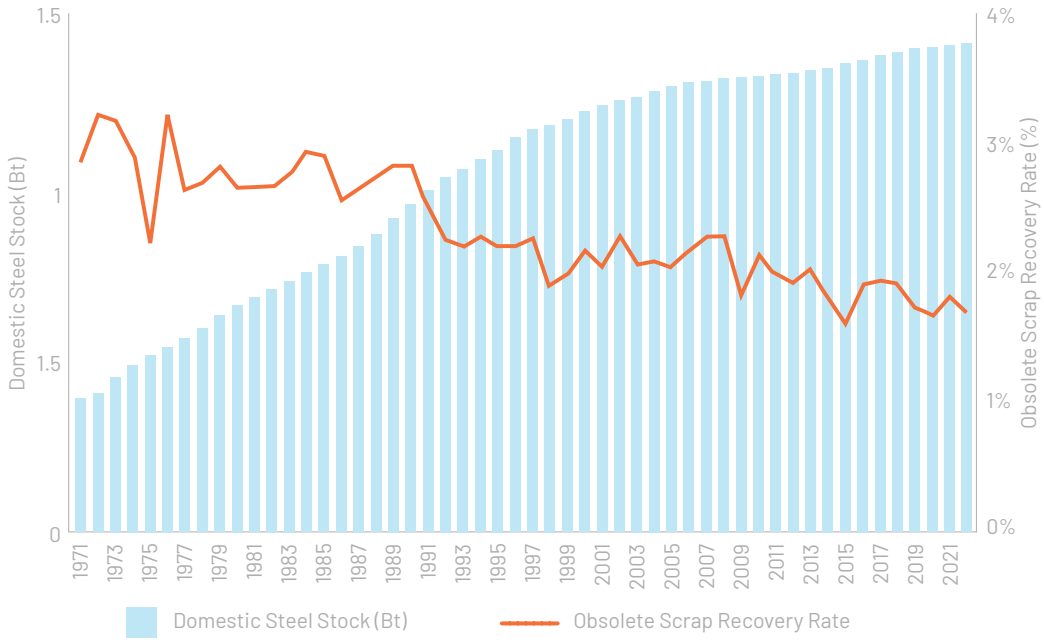
The range of steel products from EAFs is also expanding in Japan, and some manufacturers have started to produce steel plates and thin plates and are now challenging high tensile steel, products traditionally considered achievable only through BF-BOF methods. This development demonstrates that EAF steel products are not only widely applicable but also becoming increasingly versatile with no difference in quality.[9]

# FEEDSTOCKS

## THE SCRAP MARKET IN JAPAN

Domestic EAF steel manufacturers produce steel using scrap, which can be broadly classified into three categories: home scrap, generated within the steelworks; prompt scrap, arising from downstream manufacturing processes such as automotive and shipbuilding; and obsolete scrap, recovered from dismantled products like bridges, buildings, and vehicles.[10] Of these, home scrap and prompt scrap are regarded as higher quality compared to obsolete scrap. Additionally, the volume of home scrap generated is directly linked to crude steel production, while prompt scrap, which is associated with steel processing volumes, is also influenced by output. Obsolete scrap depends on the extent to which steel stock is recovered.

***Figure 3: Domestic Steel Stock and Obsolete Scrap Recovery Rate, 1971–2022***

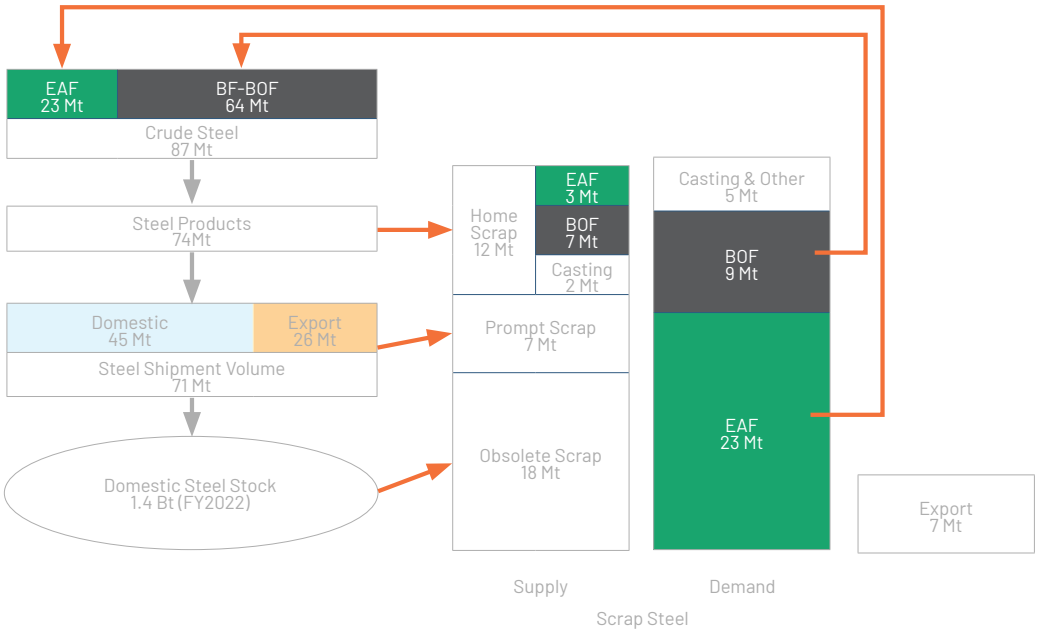



*Source: The Japan ferrous raw materials association*[12]

In Japan, the domestic steel stock has increased approximately 3.9 times over the past 50 years, reaching around 1.4 billion tonnes and has continued to grow at an average annual rate of 7.9 million tonnes over the past five years.[11] [12] Although the cumulative stock is expected to keep rising, the recovery rate has been declining, leading to a decrease in annual obsolete scrap generation from approximately 27 million tonnes to 18 million tonnes over the past 15 years (Figure 3).

Approximately 37 million tonnes of scrap steel is generated annually, with home scrap accounting for around 30%, prompt scrap for roughly 20% and obsolete scrap for about 50%.[13] Of this, 85% of domestic scrap steel is recycled into steelmaking, with around 70% of it utilised in EAFs. Excluding exports, the domestic supply and demand for scrap steel are currently balanced.

*Figure 4: Steel Recycling and Scrap Supply and Demand in FY2023*



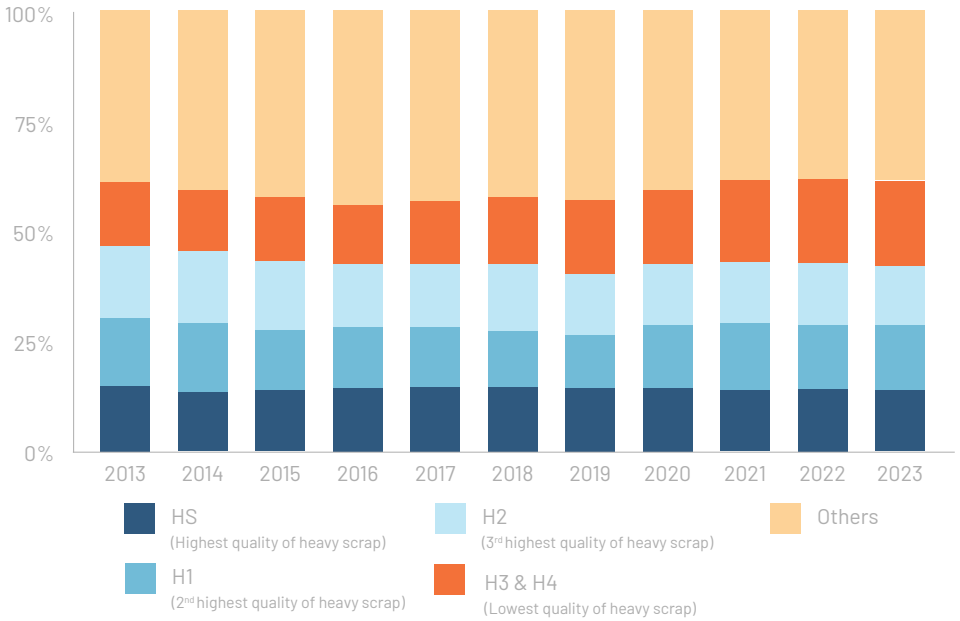

*Source: The Japan Iron and Steel Federation[14], The Japan ferrous raw materials association[1 12 13]*

Between 2018 and 2023, Japan's scrap exports consisted on average of approximately 82% obsolete scrap and 18% prompt scrap.[15] During this period, Japan ranked fourth globally in terms of average annual scrap export volume, with 44% of its exports going to South Korea, 28% to Vietnam, and 10% to Taiwan, primarily targeting Asian countries.[16] Moreover, Japan's share of total scrap exports is significant in several countries, accounting for 68% and 65% of South Korea's and China's total scrap imports, respectively. In Taiwan and Malaysia, these figures were 22% and 25%, highlighting the important role Japan's scrap exports play in promoting the use of EAF across the Asian region.

The availability of scrap is closely tied to domestic production. In a declining domestic market, this presents challenges and implications for both recycling and scrap exports. As Japan's domestic crude steel production decreases, the supply of scrap, particularly home scrap and prompt scrap will also decline.

When examining the types of scrap steel, the proportion of high-quality grades, such as HS and H1, has remained relatively stable over the past decade.[17 18 19 20] However, the share of lower-grade scrap steel, including H3 and H4, has increased by 5.4% over the past decade.[21] Consequently, lower-grade scrap steel has been used more widely, mainly in EAF operations—the primary consumers of scrap. This is, in part, because EAF steel manufacturers have made significant technological advancements in scrap selection and processing, enabling them to produce steel products even with lower-quality scrap steel.

*Figure 5: Types and Proportions of Domestically Purchased Scrap Steel*




*Source: The Japan ferrous raw materials association*[17 18 19 20]

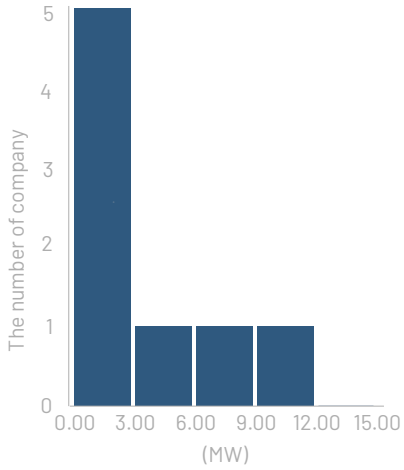
## ELECTRICITY AND PPA'S IN JAPAN

Among the 31 EAF steel manufacturers in Japan, nine companies have already advanced procurement of renewable energy through self-generation or on-site power purchase agreements (PPAs).[22 23 24 25 26 27 28 29 30] Additionally, two more companies have plans to procure RE via the same methods.[31 32] Several others are also considering measures such as installing solar power systems, demonstrating a growing commitment to emissions reduction efforts among EAF steel manufacturers.

According to Transition Asia's Green Steel Economics model, a new EAF in Japan with a 2-million-tonne annual capacity, like JFE's ongoing EAF project in Kurashiki, can produce 1.7 million tonnes of crude steel at the global average EAF capacity factor of 85%.[33] The electricity consumption is approximately 450 kWh per tonne of crude steel by using the 100% scrap-EAF route, totaling 0.76 TWh of electricity requirement per year. This would imply a matching solar installation of around 667 MW capacity.[34]

Based on currently available information, all companies that have commenced or plan to commence RE procurement are relying solely on solar power generation. However, it is estimated that RE accounts for only about 0.1% of their total electricity consumption, which is equivalent to 29.1 GWh. This means that whilst the number of companies adopting RE is increasing, the majority of their electricity supply continues to be sourced from the grid, with grid emissions factors.

***Figure 6: RE Generation Capacity Procured or Planned by Japanese EAF Steel Manufacturers and the Number of Companies Involved***



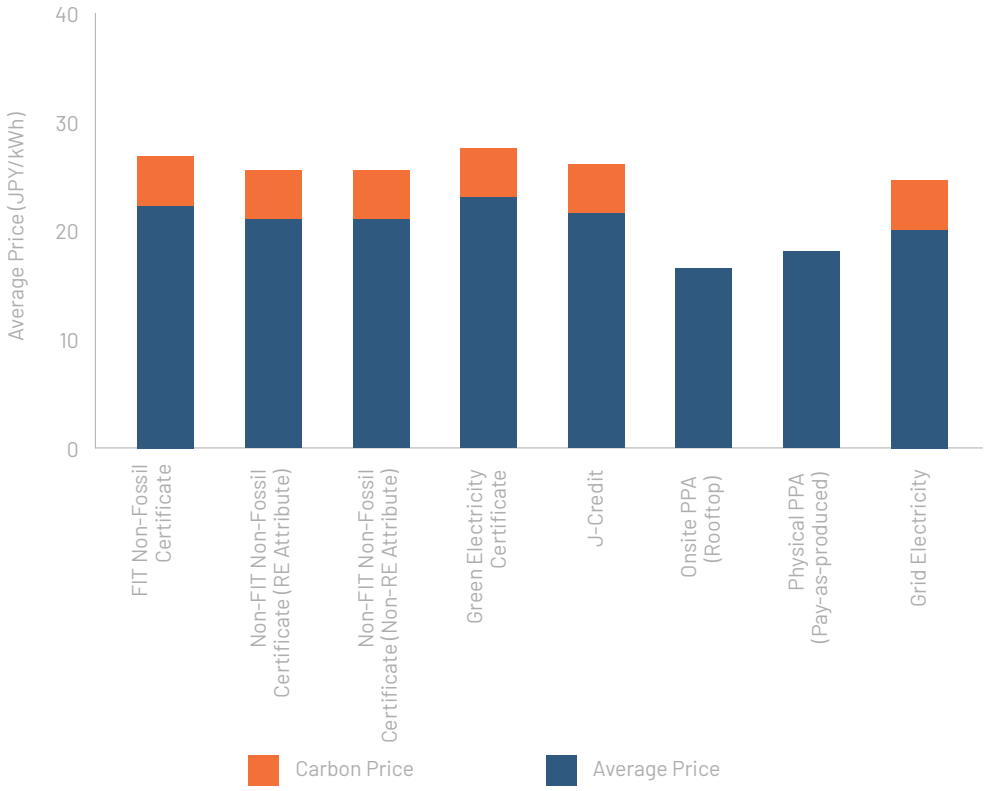

*Source: Companies' websites, TA analysis*

Japan has solar resources and growth in this sector despite land use concerns. In addition, it is beginning to boost its wind market as part of its 7th Strategic Energy Plan.[35]

It is worth noting that most off-site corporate PPAs contracted in Japan to date have been for capacities below 25 MW.[36] [37] Among EAF steel manufacturers considering PPAs, the limited options of RE projects related costs are the major concerns.

In terms of the cost of RE procurement in Japan, a comparison of RE procurement methods for extra-high-voltage electricity in FY2023 reveals that certificates for RE procurement, such as J-Credit and non-fossil certificates, are more expensive than grid electricity in some cases although built-in prices do vary with the details of the contents of each individual contract.[38] [39] Similarly, virtual PPAs, a type of offsite PPA, are also more costly, even when combined with Feed-in Premium (FIP) schemes. However, the price of pay-as-produced, physical PPAs, which involve sourcing electricity from contracted power plants via the grid, are closer to project specific LCOEs however entail higher administrative costs for corporates.

*Figure 7: Average Electricity Prices and Carbon Prices Equivalent to the EU for Extra-high-voltage Electricity*




*Source: Renewable Energy Institute*[39 44 45]*, Ember*[40]

While virtual PPAs are currently more expensive than grid electricity, they have the potential to become more cost-competitive in the future. This is due to the gradual implementation of paid emissions trading under the GX-ETS for the power sector, starting from 2033. In the EU, where power sector emissions are already monetised, PPA prices have been approximately EUR 30/MWh.[40] Applying this price to Japan suggests that all PPAs, including virtual PPAs, could eventually become more affordable than grid electricity.[41]

By procuring RE through PPAs, particularly offsite PPAs that enable large-scale RE procurement, EAF steel manufacturers can not only lower their emissions and produce low-carbon steel aligned with international standards but also hedge against future increases in grid electricity prices. Increasingly, the mechanisms to procure RE is the issue. Our conversations with EAF steel producers suggest the bottleneck is now cost predictability and competitiveness, scale and availability of PPA contracts.

# DECARBONISATION AND EAFS

## EAF STEEL'S EMISSIONS PROFILE

In the BF-BOF process, over 95% of $CO_2$ emissions are Scope 1 due to the use of coking coal in steel production.[42] In contrast, around 80% of $CO_2$ emissions in the EAF process are classified as Scope 2—

entirely electricity consumption—where the Japanese grid has an emissions factor of 0.45 kg$CO_2$/kWh. Thus, the $CO_2$ emissions of EAF steel manufacturers are heavily influenced by the extent to which fossil fuels are utilised for power generation and their ability to secure renewable electricity at scale.

The emissions from major integrated steel producers using the BF-BOF process as well as EAFs, far exceed those of their pure play EAF counterparts. This is not only due to the scale of production but also because coking coal is used as a feedstock.

***Figure 8: $CO_2$ Emissions of Selected Japanese Steel Manufacturers, FY2023***

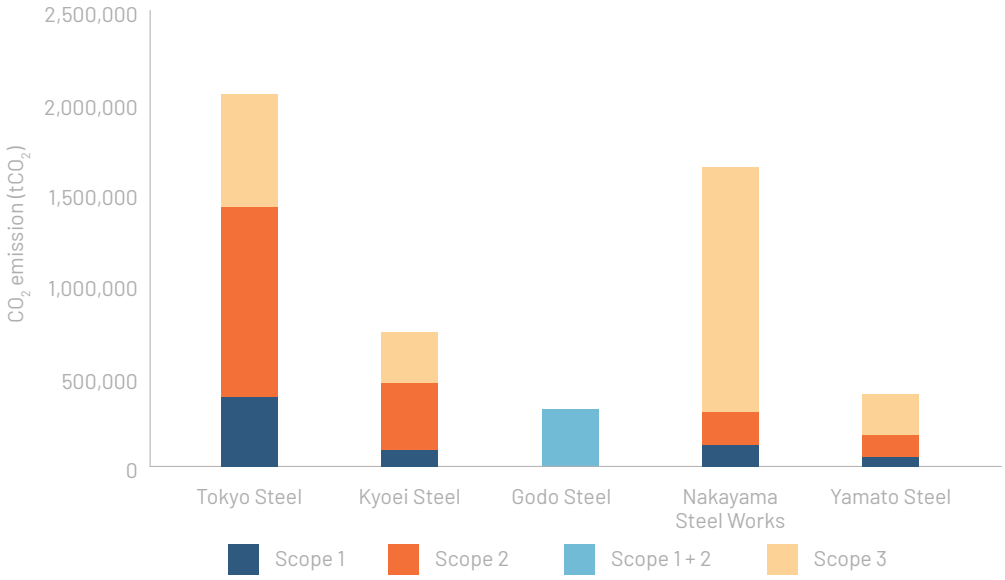
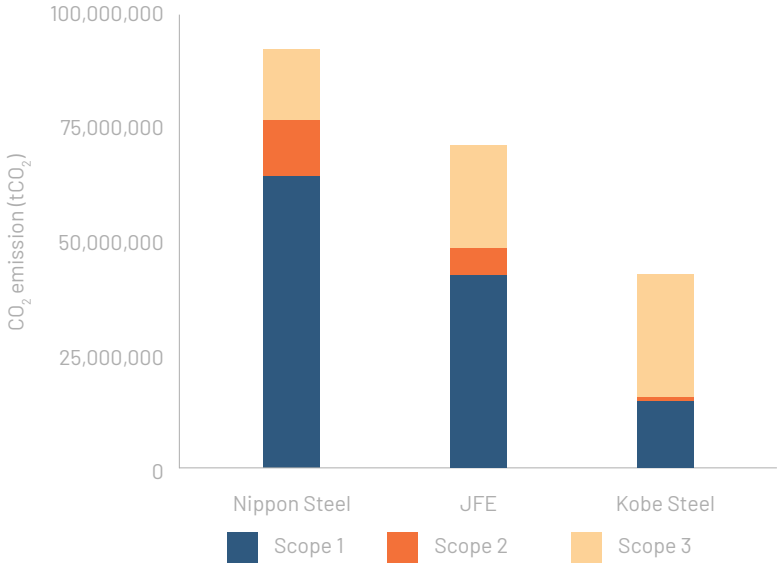



***Figure 9: $CO_2$ Emissions of Selected Japanese Steel Manufacturers, FY2023***

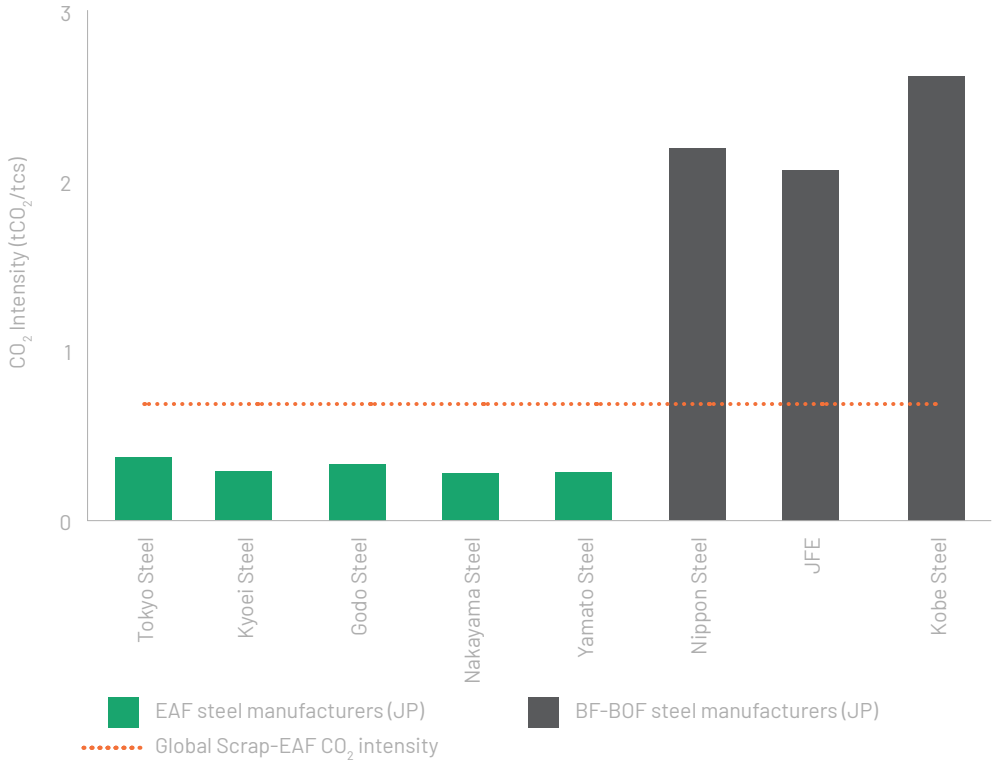



*Source: Company reports*[43]

For consumers, carbon intensity per tonne of crude steel is perhaps a more useful metric for their own emissions calculations and a key benchmark for the decarbonisation of the industry. The carbon intensity per tonne of crude steel (tcs) for EAF steel production is 0.33 $tCO_2$/tcs when using grid electricity in Japan, approximately 81% lower than the 1.76 $tCO_2$ for BF-BOF production. When renewable electricity is used, this figure drops further to 0.10–0.05 $tCO_2$, a potential reduction of around 97%.[44]

The actual carbon intensity of the top five domestic EAF steel manufacturers ranges from 0.28 to 0.37 $tCO_2$/tcs, whereas the three major Japanese BF-BOF steel manufacturers have carbon intensities between 2.06 and 2.61 $tCO_2$/tcs, making the EAF steel manufacturers' emissions and their products, 82–89% lower.[45 46 47 48 49 50 51 52 53]

***Figure 10: Carbon Intensity of Major EAF Steel Manufacturers in Japan, Compared to Japanese BF-BOF Steel Manufacturers and the Global EAF Average***




*Source: Companies' websites, worldsteel*[37]

According to the IEA's Near Zero Emission Steel standard, achieving 0.4 $tCO_2$/tcs is required when producing steel without the use of scrap, and less than 0.05 $tCO_2$/tcs when producing exclusively with scrap steel.[54] At present, no Japanese company meets this strict criteria, highlighting the need for further reductions in carbon intensity. As above, securing scrap and renewable electricity is the key opportunity for decarbonisation and growing the green steel market.

# MARKETING OF EAF PRODUCTS

## EAF STEEL'S CUSTOMERS

In Japan, EAF steel is primarily used in the civil engineering and construction sectors.[55] Major EAF steel manufacturers rely on construction companies as their main customers, but they also supply to the machinery parts and shipbuilding industries.[56 57 58 59 60] Additionally, some manufacturers are exploring opportunities to supply the automotive industry in the future.[61 62] For example, in November 2023, Tokyo Steel unveiled an EV concept car called the Upcycle Car, which incorporates EAF steel made from scrap metal in approximately 70% of its body.[63] Demonstrating the increasing scope for EAF steel across multiple industries beyond its traditional customer base.

## LOW-CARBON STEEL BRANDS

As demand for green steel grows, EAF steel brands are likely to proliferate and the carbon intensity of these brands to become more transparent. Even now, there are multiple offerings from the sector in Japan. For example, in 2024, Tokyo Steel launched a green steel brand called "Hobo Zero" (Near Zero), and Yamato Steel launched "+Green™".[64 65]

Hobo Zero reduces $CO_2$ emissions from electricity used during production by utilising non-fossil certificates, lowering its carbon intensity to approximately 0.1 $tCO_2$/tcs. The premium for this product is an extremely competitive 6% according to Tokyo Steel. Yamato Steel's "+Green™" offsets GHG emissions through nature- and forest-derived carbon credits and RE certificates from biomass power generation, further reducing its carbon intensity to consumers. While the premium for Yamato Steel's product has not been disclosed, it is likely to be comparable to Tokyo Steel's due to the use of similar certificates. In comparison, the premium for controversial "mass balance" products such as JFE's "JGreeX" and Kobe Steel's "Kobenable Steel" stands at approximately 40% and 100–200%, respectively.[66 67] Even where certificates and credits are used EAF steel manufacturers offer significantly cheaper low-carbon steel.

Chubu Steel Plate, one of the few domestic EAF steel manufacturers producing thick plates, is planning to launch green steel sales in the second half of FY2025.[68] As a result, low-carbon high grade steel from domestic EAF steel manufacturers will be competing with domestic BF-BOF steel manufacturers of the same products, ratcheting competition and enabling consumers of this high grade steel to reduce Scope 3 emissions cost-effectively.

*Table 1: Comparison of Selected Low Carbon Steel Brands in Japan*

| | Nippon Steel | JFE | Kobe Steel | Tokyo Steel | Yamato Steel |
|---|---|---|---|---|---|
| Production | BF-BOF | BF-BOF | BF-BOF | EAF | EAF |
| Premium | Not disclosed | 40% | 100–200% | 6% | Not disclosed |
| Method | Mass Balance (Conversion to an EAF process) | Mass Balance (Expanding the use of scrap) | Mass Balance (Using HBI) | Non-Fossil Certificate with Tracking | Nature/Forest-derived carbon credit and RE certificates from biomass power generation |
| Applied products | All | All | All | All | All |
| Emissions reduction | ≤100% | ≤100% | 50% or 100% | ~75% | ≤100% |

*Source: Companies' websites*

Moreover, Japan's GX-ETS emissions trading system, set to commence in FY2026, is expected to further reduce the price premium for EAF steel. This reduction is anticipated as the system drives up the price of conventional BF-BOF steel and provides additional income streams for low carbon steel producers from sold credits. Consequently, industries seeking to lower their Scope 3 emissions may find EAF steel a more appealing option.

# CURRENT POLICIES FOR LOW CARBON STEEL

In Japan, subsidies from the Japan Climate Transition Bond can support a transition from the BF-BOF process to EAF steel production.[69] Up to one-third of the capital investment can be subsidised by the government. However, no policies specifically target existing EAFs or current production. Anecdotal evidence suggests that despite calls from EAF steel producers for support to renew and reinvest in existing facilities, the introduction of such policies is unlikely in the near future.[70]

Elsewhere, the Strategic Field Domestic Production Promotion Tax System, established as part of the FY2024 tax reforms, offers a deduction of JPY 20,000 per tonne for the production and sale of green steel.[71] At around USD 130 this is a meaningful credit. However, it remains uncertain whether EAF-produced steel is eligible in the scheme.[72]

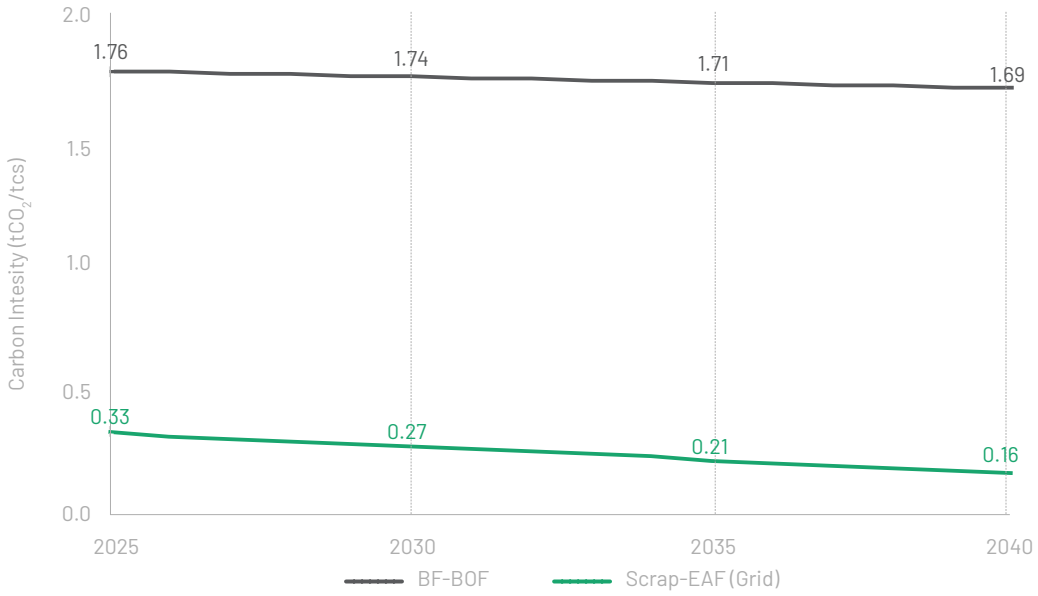
Neither the 7th Strategic Energy Plan (7th SEP) nor the GX2040 Vision, approved by the Cabinet in February 2025, outline detailed measures for the steel industry and no major policy changes are expected in the short term. Nonetheless, Transition Asia anticipates that some policies and directives could influence the decarbonisation efforts of EAF steel producers in the future.

## THE 7TH STRATEGIC ENERGY PLAN (7TH SEP)

The 7th SEP states that RE will become the primary power source over its lifetime, with 40–50% of the power supply expected to come from RE by FY2040.[34] Transition Asia analysis suggests that this transition will

reduce the carbon intensity of EAF steel, using grid electricity, to 0.16 $tCO_2$/tcs. This is approximately half the current level and just 9.5% of the carbon intensity of BF-BOF steel in FY2040.

***Figure 11: Changes in Carbon Intensity of BF-BOF Steel and EAF Steel Based on Grid Electricity Delivered by the 7th SEP***




*Source: 6th SEP[73], 7th SEP[35], TA analysis*

With incoming, and likely more stringent carbon pricing mechanisms, compounded by solid demand for low carbon steel products, this is a clear competitive advantage for EAF steel manufacturers. However, relying solely on grid electricity remains insufficient as this level still exceeds some low carbon steel and near zero carbon steel standards.[54] Nevertheless, the commitment to renewable energy will stimulate independent power generation and investment in renewable electricity projects which can only be a good thing for EAF steel producers.

## GREEN TRANSFORMATION (GX)

The GX2040 Vision proposes carbon market creation and carbon pricing to promote green transformation (GX), including green steel. It suggests that both public and private procurement will be encouraged, with some methods for advancing green steel already clarified.[74] For instance:

- Under the Ministry of the Environment's Act on Promoting Green Procurement, it has been proposed that products made of steel with a calculated and disclosed carbon footprint, along with the amount of emission reductions, should be prioritised in procurement unless supply constraints or other impediments exist.
- The GX Leadership Declaration seeks to acknowledge and promote companies actively delivering services or products, such as green steel. It also aims to offer these companies incentives, such as

awarding additional points when applying for government subsidies.[75]
- The revision of the Subsidy for Introduction of Clean Energy Vehicles (CEV Subsidy) requirements, enables consumers to receive benefits if car manufacturers adopt green steel.[76]

However, while steel from BF-BOF companies marketed as "mass balance"—an approach that remains highly debated—is explicitly mentioned, EAF steel is notably absent, potentially excluding it from these measures. Although there are calls for EAF steel to be included, the absence of policy changes could result in limited impact.[70]

The summary report from the Ministry of Economy, Trade and Industry's Green Steel Study Group did not include concrete measures but highlighted the need to "actively promote the use and expand the applications of steel produced through the EAF process" and to "ensure the effective utilisation of steel produced from scrap through the EAF process wherever possible."[74] Furthermore, the report emphasised the importance of "enhancing collaboration among relevant businesses to promote the effective use of steel scrap." If policies are introduced to realise these goals, they would contribute to promoting the use of EAF steel.

In addition, details about the GX-ETS, carbon pricing scheme, have emerged. This system targets companies with an average annual direct $CO_2$ emission of 100,000 tonnes or more, encompassing some major EAF steel producers as well as all BF-BOF producers.[77] Although the allocation details remain unclear, the impact on EAF steel producers is expected to be relatively minor compared to BF-BOF companies, which produce over 20 times more emissions. It should provide benefits to EAF steel producers by reducing any green premiums with allowance sales. However, the scheme also considers additional allocations based on research and development expenditures. If these rather vague provisions favour BF-BOF companies, they could offset a decrease in the premium of EAF steel.

At present, no policies have been introduced to actively promote the use of EAF steel or Japan's advantages in this sector. However, it is evident that EAF steel will further reduce its carbon intensity compared to BF-BOF steel, contributing significantly to decarbonisation in near term and in the future as the 7$^{th}$ SEP and GX2040 are rolled out.

# RECOMMENDATIONS

1. **Expanding the Use of Renewable Energy in EAF Operations**
   The decarbonisation potential of EAF steelmaking is maximised when powered by renewable electricity. With on-grid PPAs suited to industrial uses more expensive than current average grid electricity costs, the short term draw for EAF mills to sign PPAs is not immediately enticing. However, hedging electricity costs for the long term may be the cheaper option, historical price development being driven by the skyrocketing price of LNG. High grid costs could be further compounded by Japan's developing ETS. Low numbers of renewable electricity projects and the potential revenue upside for project developers related to increasing grid prices dampen the PPA market, but there is room for proactiveness from EAF mills as offtakers to hedge electricity costs and ensure renewability of their operations.

2. **Strengthening Policy Recognition and Support for EAF Steel**
   Despite the clear environmental benefits of scrap-based EAF steel, government policies and incentives continue to favour larger, integrated steel producers. The EAF sector needs greater recognition within public policy frameworks to ensure fair access to financial support, infrastructure development, and decarbonisation funding. Designating EAF steel as a form of low-carbon steel and incorporating it into government-backed schemes would also benefit companies seeking to reduce their Scope 3 emissions.

3. **Advancing EAF Technology for High-Quality Steel Production**
   The further adoption of EAF steel products can be effectively achieved through the manufacturing of high-quality steel using the latest EAF technology. By implementing the latest EAF technology, it will be possible to produce steel products that were previously only achievable through the BF-BOF process. This shift will help meet the growing demand for green steel and accelerate the transition away from BF-BOF methods.

4. **Enhancing Scrap Recycling and Ensuring Supply Stability**
   A stable and sufficient supply of scrap is essential for the growth of EAF-based steel production. As the transition to EAF represents the fastest route to decarbonising the steel industry, further promotion of scrap recycling and improvements in scrap collection infrastructure are crucial to preventing potential shortages and ensuring long-term sustainability. Given the anticipated global increase in scrap demand and general downcycling of steel,importing low-carbon primary iron products such as green hot briquetted iron (HBI) can help mitigate the shortage of high-quality scrap and ensure products of high quality.

## APPENDIX 1—JAPANESE EAF STEEL PRODUCERS (ORDINARY STEEL, EXCLUDING INTEGRATED PRODUCERS)

*Table 1. Types of Steel Product by EAF Steel Manufacturers*[78]

| EAF makers | Steel Bar | H Beam | Flat Bar | Wire Rod | Shaped Steel | Thick Plate | Thin Plate |
|---|---|---|---|---|---|---|---|
| Tokyo Steel | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| Asahi Industries | ✓ | | | | | | |
| Itoh Iron & Steel | ✓ | | | | | | |
| Oji Steel | ✓ | | ✓ | | | | |
| Osaka Steel | ✓ | | | | ✓ | | |
| Otani Steel | ✓ | | | | | | |
| Kishiwada Steel | ✓ | | | | | | |
| Kyushu Steel | ✓ | | | | | | |
| Kyoei Steel | ✓ | | ✓ | | ✓ | | |
| Godo Steel | ✓ | ✓ | | ✓ | ✓ | | |
| Sanko Seiko | ✓ | | | | | | |
| JFE Bars & Shapes | ✓ | ✓ | ✓ | | ✓ | | |
| Shimizu Steel | ✓ | | | | | | |
| Jonan Steel | ✓ | | | | | | |
| Shinkansai Steel | ✓ | | ✓ | | | | |
| Nakayama Steel Works | | | | ✓ | | ✓ | ✓ |
| Nippon Steel Structural Shapes | | ✓ | | | | | |
| Takunan Steel | ✓ | | | ✓ | | | |
| Chubu Steel Plate | | | | | | ✓ | |
| Chiyoda Steel | ✓ | | | | | | |
| Tokai Steel | ✓ | | | | | | |
| Tokyo Kohtetsu | | | | | ✓ | | |
| Tokyo Tekko | ✓ | | | | | | |
| Topy Industries | ✓ | ✓ | ✓ | | ✓ | | |
| Nakayama Steel Products | ✓ | | | | | | |
| Hokuetsu Metal | ✓ | | | ✓ | ✓ | | |
| Mitsuboshi Metal Industry | ✓ | | | | | | |
| Mukoyama Steel Works | ✓ | | | | | | |
| Yamaguchi Kogyo | ✓ | | | | | | |
| Yamato Steel | | ✓ | | | ✓ | | |
| Ube Steel | | | Billet manufacturing only | | | | |

## APPENDIX 2—THE CONTENT AND TARGETS OF NATIONAL POLICIES ON EAFS AND GREEN STEEL

| Policy Name | Content | Subsidy | Target | |
|---|---|---|---|---|
| | | | Integrated manufacturers | EAF steel manufacturers |
| Green Innovation Fund | Tramp element removal in EAF | ≤ JPY 30.6 billion (approx. USD 197million) | ✓ | Not specific |
| Green Innovation Fund | High-efficient melt of DRI in EAF | ≤ JPY 23 billion (approx. USD 148 million) | ✓ | - |
| The Strategic Field Domestic Production Promotion Tax System | Tax credits for companies producing & selling green steel | • 7th year: JPY 20,000/t (approx. USD 130)<br>• 8th year: JPY 15,000/t (approx. USD 95)<br>• 9th year: JPY 10,000/t (approx. USD 65)<br>• 10th year: JPY5,000/t (approx. USD 30) | ✓ | Not specific |
| Energy and Manufacturing Process Transformation Support Business (Business I (Steel)) | Shifting the production processes from BF-BOF to EAF | • Support up to one-third of capital investment costs<br>• JPY 484.4 billion (including steel, chemical, pulps, and cement industries. No breakdown available)<br>• (JFE: JPY 104.5 billion (approx. USD 673 million) )<br>• From the Japan Climate Transition Bond | ✓ | - |
| Act on Promoting Green Procurement | Prioritisation in public procurement unless supply impediments exist | N/A | ✓ | Not specific |
| GX Leadership Declaration | • It seeks to acknowledge and promote companies actively delivering green steel<br>• It also aims to offer these companies incentives | N/A | ✓ | Not specific |
| The Subsidy for introduction of clean energy vehicles (CEV Subsidy) | It enables consumers to receive benefits if car manufacturers adopt green steel | ≤ JPY 50,000/car (approx. USD 320) | ✓ | Not specific |

# ENDNOTES

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8 https://www.jisf.or.jp/data/yoto/documents/FY2018.pdf
9 A full list of EAF Steel Producers is available in Appendix 1.
10 https://transitionasia.org/scrap-steel-explainer/
11 Domestic steel stock refers to the amount of steel used in Japan that is still in the country in some form expressed in terms of iron and steel. https://www.jisri.or.jp/english/recycle.html
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41 It is important to note that most PPA prices are tied to forward-looking wholesale prices.
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43 Data is aggregated at a corporate level and this data may have different calculation methods and may be incomplete in part. For example, data for Scope 3 emissions are rarely complete and will vary by company.
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