The Impact of a US Border Carbon Fee on the Steel Industry and Trade:

An Assessment of the Foreign Pollution Fee Act

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Executive Summary

The United States steel industry faces evolving challenges from China's steel overcapacity, new trade policies, and long-term goals to decarbonize. To address these challenges, there are proposed U.S. border carbon fee policies aimed at addressing carbon leakage and maintaining the competitiveness of domestic industry by imposing charges on steel imports based on their carbon intensity. Border carbon fees are designed to level the playing field between domestic and foreign producers by pricing the carbon content of imported goods, particularly in sectors like steel where production emissions vary significantly by country. The Foreign Pollution Fee Act (FPFA), recently reintroduced in Congress, targets these variations through a structured fee system. This report models how the FPFA could affect steel import volumes and government revenue through 2030.

We employ a data-driven methodology to assess the potential impacts of the FPFA on U.S. steel trade between 2026 and 2030. Using 2024 trade data from the UN Comtrade database, the analysis models steel import volumes by country and product type and combines this with country-specific physical-basis carbon intensity (tons CO_2 per ton of steel) estimates based on production route shares. These estimates enable calculation of the emissions embedded in steel imports and the corresponding FPFA charges, which vary depending on their emissions intensity relative to a U.S. benchmark. We also model how these charges would evolve under the FPFA's proposed tiered structure and adjusts for higher charges applied to non-market economies or facilities controlled by foreign entities of concern. Import fee scenarios are paired with different elasticity assumptions to assess how responsive import volumes may be to the added cost, thereby estimating both reductions in steel imports and expected federal revenue. Overall, the study offers a structured framework for understanding how the FPFA could reshape U.S. steel import patterns and contribute to carbon-based trade policy.

The analysis finds that the FPFA could substantially reduce U.S. steel imports from current sources, particularly from carbon-intensive producers. Under the import demand elasticity of -1.0 scenario, steel imports fall by 34% from current steel suppliers in 2026 compared to 2024 levels, a decline of 12,730 kilotons (kton) per year (Figure ES1). The annual reductions increases slightly in subsequent years, and the cumulative effect remains significant.

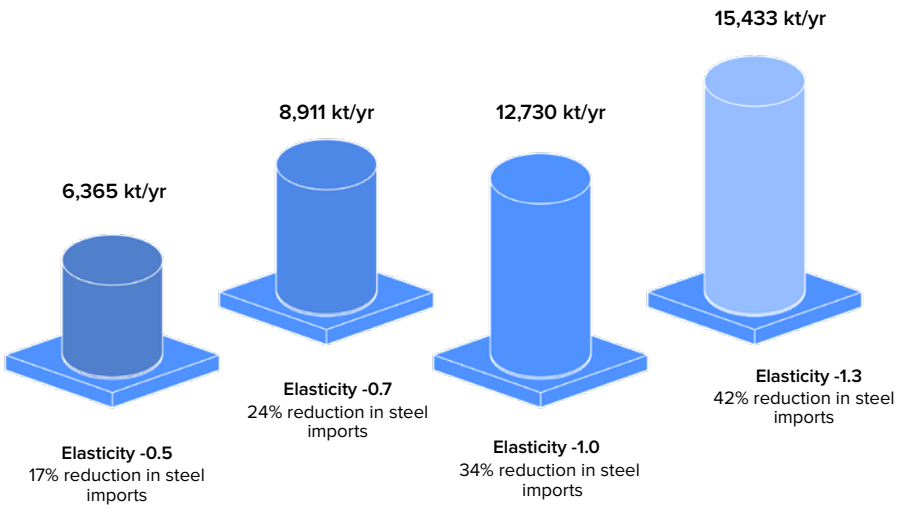


Figure ES1: Reduction in the US steel imports in 2026 compared to 2024 import level from current steel suppliers due to the FPFA under different elasticity scenarios (Source: this study)

Under an import demand elasticity of -1.0, the FPFA is projected to cause sharp declines in U.S. steel imports from high-carbon-intensity suppliers, with the largest reductions for China (–95%) and Vietnam (–85%), and significant drops for the Netherlands, Austria, India, and Japan. Moderate declines are expected for Brazil, Malaysia, South Korea, and the UK, while Canada and Spain see minimal decreases. No reductions are projected for Italy, Mexico, Thailand, or Türkiye. Overall, the policy would heavily impact most current suppliers unless exemptions or agreements are in place, while cleaner producers would be less affected.

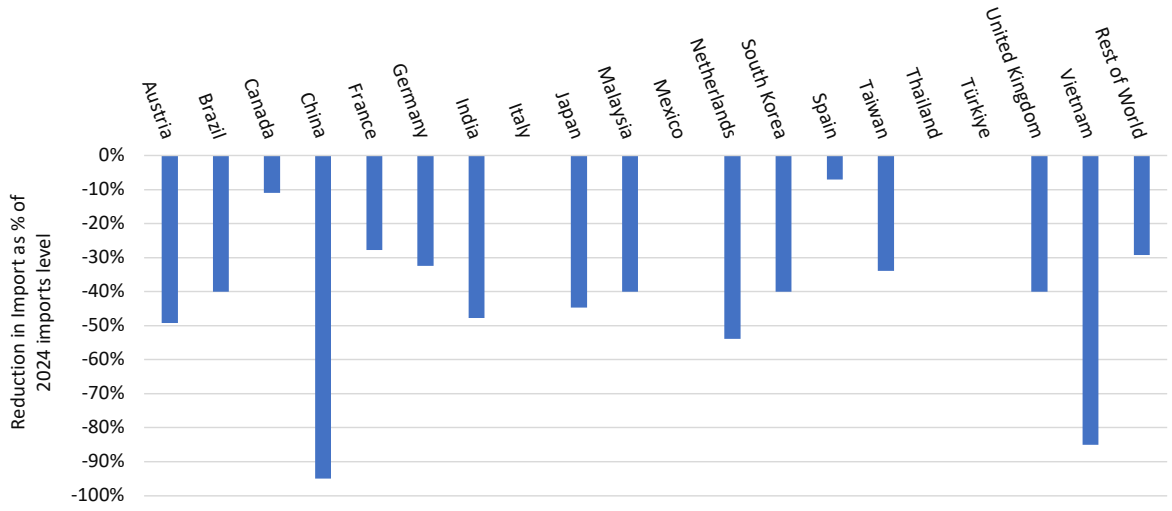


Figure ES2. Annual reduction in US imports from each country in 2026 as % of 2024 import level under elasticity -1.0 (Source: this study)

The findings suggest that the FPFA could significantly alter US steel trade patterns, encouraging lower-emission production methods abroad while increasing the competitiveness of cleaner steel sources in the U.S. market. In this study, we did not model how reduced imports would be replaced. However, given that U.S. raw steel production capacity in 2024 was 107 Mt per year, while actual production was 81 Mt (USGS 2025), the domestic industry has some headroom to increase output. At the same time, some substitution with alternative sources of steel supply from countries with cleaner production may also occur.

Correspondingly, projected FPFA revenue from steel imports ranges from $2.6 billion to $5.8 billion in 2026 and gradually increases to $3 billion to $7.8 billion per year by 2030. This revenue trajectory reflects the elasticity of demand - when buyers are more responsive to price increases, import volumes fall more sharply, reducing the revenue base. The cumulative FPFA revenue from 2026 to 2030 is substantial, estimated between $14.7 billion and $36.3 billion in 2023 depending on elasticity assumptions (Figure ES3).

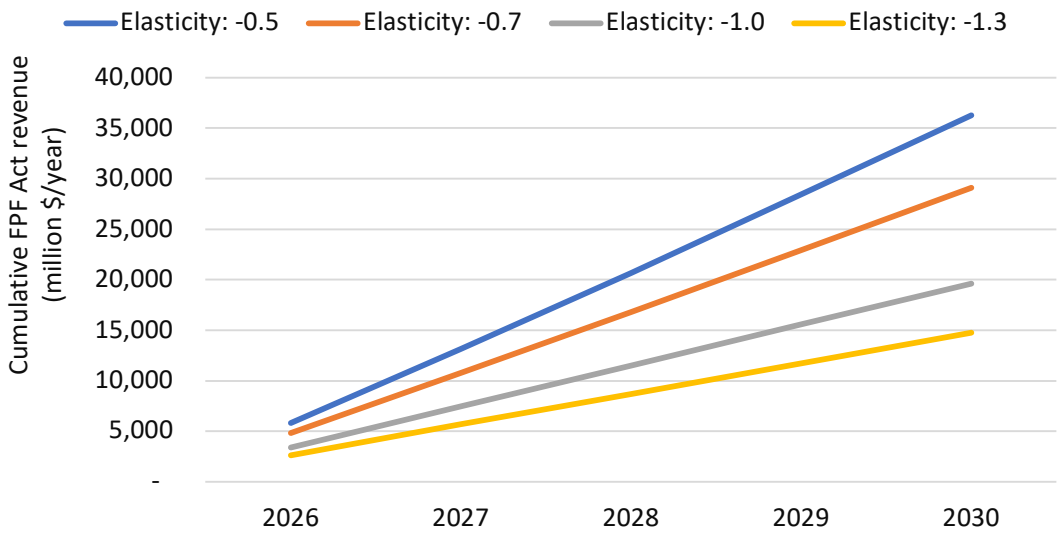


Figure ES3: Cumulative FPFA revenue from imported steel in the US across elasticity scenarios, 2026-2030 (Source: this study)

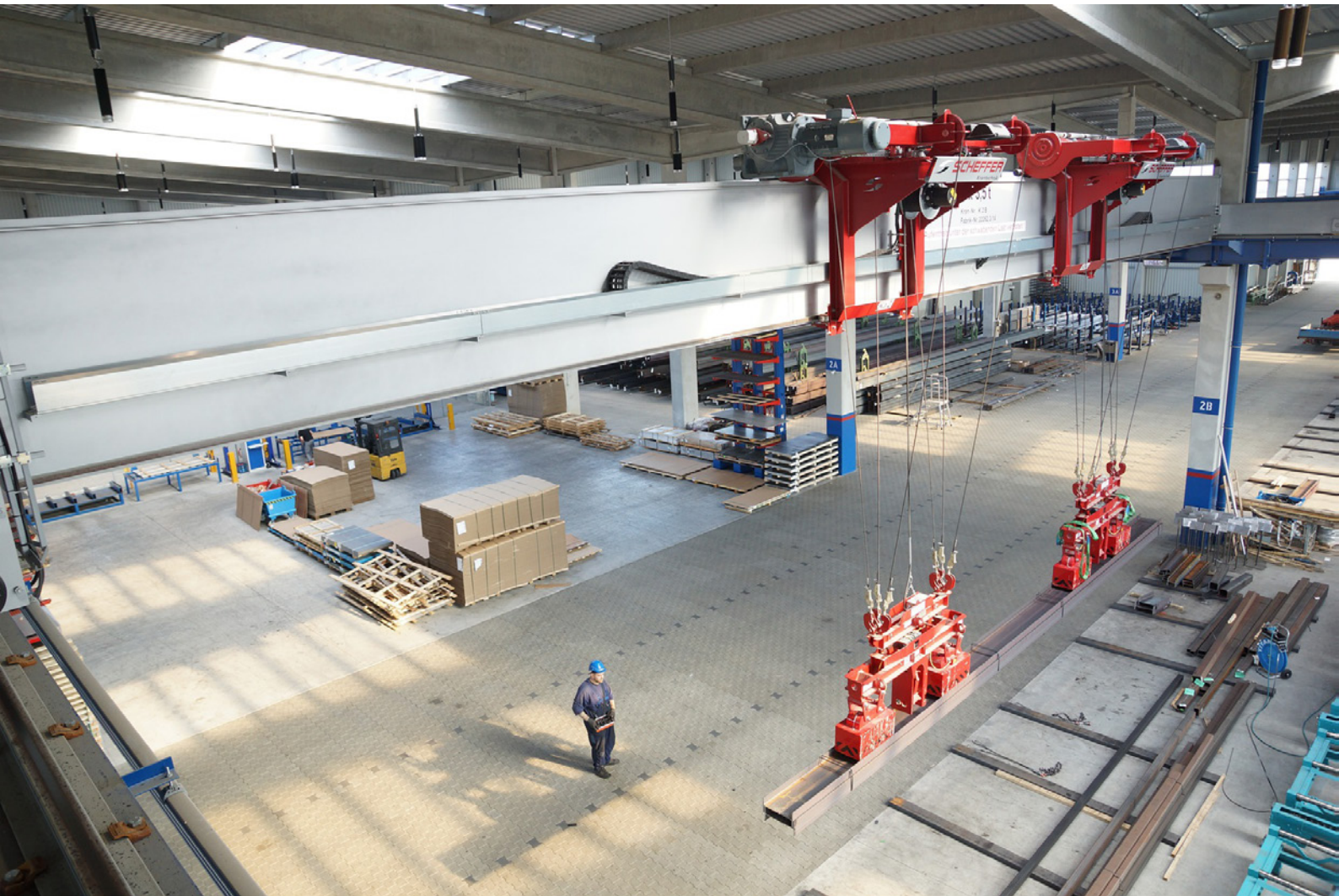
We also outline in this report how the proposed FPFA would interact with existing U.S. steel tariffs, particularly tariffs imposed under Section 232 of the Trade Expansion Act of 1962. Since 2018, the United States has imposed a 25% tariff on most steel imports under Section 232, with limited country exemptions or quota arrangements, aiming to reduce dependence on foreign steel and support domestic production. In February 2025, President Trump eliminated those country-specific exemptions and in June 2025, he raised the tariff rate on steel imports from 25 to 50 percent. While steel (and other) products covered by Section 232 tariffs are largely exempt from President Trump's global "reciprocal" tariffs imposed under the International Emergency Economic Powers Act (IEEPA), a separate 20 percent tariff imposed under IEEPA on imports from China (related to fentanyl trafficking) does apply to steel imports originating in China.

If enacted, the FPFA would not replace Section 232 at this time but would instead layer a carbon-intensity-based tariff on top, with distinct objectives and enforcement mechanisms. This dual system could lead to overlapping charges on the same product, substantially increasing costs for importers and complicating administration. Some proposals suggest coordination through trade agreements or flexibility to reduce one tariff if the other achieves the intended goals. Without coordination, however, clean steel could be penalized the same as high-emission steel under Section 232, potentially discouraging imports of lower-carbon steel even as other markets (e.g., the EU) reward them. In this context, harmonizing the FPFA with existing trade tools can avoid redundancy and enable cleaner trade while keeping the US steel industry competitive.

The successful implementation of a U.S. border carbon fee like the FPFA requires a design that reflects domestic carbon benchmarks, production capacity, trade elasticity, and international trade rules, while also supporting innovation in low-carbon technologies. To improve transparency and predictability, the FPFA's administration should be streamlined through harmonized international methodologies as much as possible, use of existing emissions data, and clear exemption rules.

The FPFA should base initial-period variable charges on physical-basis carbon intensity (tons CO_2 per ton of steel) rather than the current monetary-basis values. Physical-basis carbon intensity provides a fairer and more accurate reflection of steel production emissions and more accurately rewards the U.S. domestic steel industry, which has one of the lowest average emissions globally. The policy should also account for broader impacts, such as import reductions, supply capacity, charge levels, and equivalent carbon prices, and apply the tier-system formula with physical-basis carbon intensity data from the start to improve fairness, transparency, and effectiveness in promoting low-carbon steel production.

The current one-size-fits-all variable charge calculation method in FPFA for all covered industries fails to account for sector-specific differences, which may lead to excessive import reductions, even from cleaner sources, disrupting downstream industries such as construction and automotive. A sector-specific approach (for steel, aluminum, glass, fertelizer, etc.) is needed to better balance environmental goals with trade impacts. In parallel, aligning the FPFA with emerging global carbon border policies especially the EU CBAM through mutual recognition of methodologies and verification systems will help reduce compliance costs and promote consistency in international climate policy.



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1 Introduction

Several bills proposing a Border Carbon Adjustment or border carbon fee policies have been introduced in the United States Congress. Border carbon fees are a policy tool designed to equalize the costs faced by domestic and foreign producers when it comes to emissions. These policies help preserve the competitiveness of domestic industries by imposing a fee on carbon-intensive imports or offering rebates for low-carbon exports. The policies are designed to prevent carbon leakage, when production increases abroad due to stricter regulations domestically. This could be caused by companies relocating the production of steel or steel-containing products to countries with lower environmental costs, or losing market share to such producers, undermining domestic economic performance and global climate goals (Pomerleau, 2020; Cosbey, 2023). Border Carbon Adjustment policies are meant to preserve economic competitiveness in the case that domestic policies, such as carbon pricing or stricter pollution control regulations, raise production costs relative to countries with different standards (Pomerleau, 2020).

Steel is currently primarily produced through two main routes: the blast furnace–basic oxygen furnace (BF-BOF) route and the electric arc furnace (EAF) route. The BF-BOF route involves converting iron ore into molten iron in a blast furnace using coke, followed by refining in a basic oxygen furnace to produce steel. This process is highly carbon-intensive due to the direct use of coal and the chemical reduction of iron ore. The EAF route – or secondary steel manufacturing - typically melts scrap steel using electricity, resulting in significantly lower emissions. The main alternative to the BF-BOF route for production of primary steel is the direct reduced iron (DRI)-EAF route.

Steel products are generally classified into two main categories: flat products and long products. Flat products include steel coils and plates, which are commonly used in automotive manufacturing, shipbuilding, appliances, and construction. Long products encompass items such as wire rods, rebar, structural beams, bars, and pipes, which are widely used in infrastructure, buildings, and machinery.

The carbon intensity of steelmaking varies widely across countries based on the relative share of BF-BOF versus EAF production and the carbon intensity of their electricity grids. Other factors driving variation in the carbon intensity of steelmaking across countries include the fuel mix used within the iron and steel sector, the types of feedstocks used in both BF-BOF and EAF processes, the extent to which energy-efficient technologies have been adopted, the specific steel product mix produced in each country, and differences in the age of steel manufacturing facilities (Hasanbeigi 2022). This variation could drive the impact of border carbon adjustment or carbon fee policies.

In this report, we provide an analysis of the 2025 Foreign Pollution Fee Act (FPFA), which was recently reintroduced in the United States Senate. As a Republican-led bill, it has potential bipartisan support and alignment with the current administration's policy priorities as they relate to promoting domestic manufacturing. This report begins with an overview of steel production and trade patterns in the US. Next, it discusses several key legislative proposals in the United States regarding border carbon fees, including the FPFA and its steel-related provisions. We developed a methodology and scenarios to estimate the impact of the FPFA on steel imports and assess potential revenue from the FPFA over time (through 2030). We also discusses other tariffs that may affect the US steel imports and their potential interactions with the FPFA, if implemented.

2 US Steel Production and Trade

The United States produced about 81 million tons of crude steel in 2024, and had a total crude steel production capacity of 107 million tons, representing a capacity utilization rate of 76% (U.S. Geological Survey 2025).The US is a significant player in the global steel industry as the world's fourth largest producer of steel (behind China, India, and Japan), representing about 4% of global production and 9% of global steel production outside of China (worldsteel association 2025a). US crude steel production is projected to grow through 2030 based on increasing demand from the construction, automotive, and energy sectors (U.S. Department of Energy 2023).

The value of crude steel produced in the US in 2024 was $120 billion, down from $132 billion in 2023 (USGS 2025). The US steel industry employed about 81,000 people in 2024 in iron and steel mills, and 56,000 people in steel product manufacturing. These employment numbers slightly decreased from 2023, but are higher than they were in 2022.

The top states by steel production are Indiana (25% of total national steel production), Ohio (12%), Texas (6%), and Pennsylvania (5%). Concentration in the Midwest and Northeast is based on infrastructure and accessibility to raw materials like iron ore and coal, and proximity to end users, although production in other regions is growing. The main end uses of steel in the US are for construction, automotive manufacturing, and use in appliances and machinery (USGS 2025).

72% of crude steel in the US was produced by the EAF route in 2024, with the remaining 28% produced via the BF-BOF route. This is a much higher share of EAF production than the world average, with 29% of global steel being produced via the EAF route. The share of EAF production in the US has increased slowly over time, up from 47% in 2000 (Figure 1). Most of the input to EAF steelmaking in the U.S. is steel scrap, but the country also produced around 5.5 Mt of natural gas-based DRI in 2024, which was primarily used as feedstock for EAFs (World Steel Association, 2025b).

The US has eight BF-BOF steel plants and around 105 EAF plants (U.S. Department of Energy 2024a). Although BF-BOFs represent a less than one quarter of US steel production, they are responsible for two thirds of the sector's CO_2 emissions (US DOE 2023).

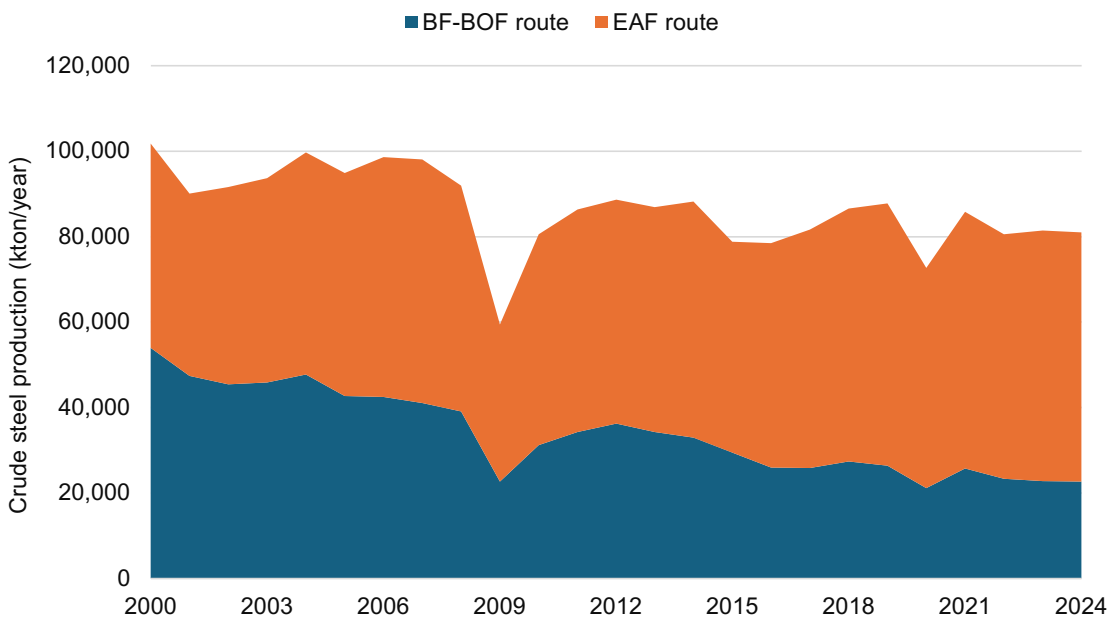


Figure 1: Crude steel production in the U.S. by production routes, 2000-2024 (Source: USGS, various years)

Note: The drops in production in 2009 and 2020 are due to the economic recession and COVID-19 pandemic, respectively

The production routes for flat and long steel in the US vary. Flat steel is produced roughly equally through the BF-BOF route and EAF route, while long steel in the US is produced almost entirely via EAFs (US DOE 2023). Although BF-BOFs were historically preferred for producing certain high-specification grades of steel, particularly for automotive and defense applications, EAF technology has made significant advances and are expected to be capable of producing virtually all major steel grades, including advanced flat products, by around 2030 (UK Steel 2024, SteelWatch 2025, Nucor 2024).

The US imported approximately 36 million tons of iron and steel in 2024. Canada was the largest source of imports, followed by Mexico, Brazil, and China. The FPFA classifies two categories for steel: “iron and steel” (see Table 1 for HS codes), and “articles of iron and steel” (see Table 2 for HS codes), with “iron and steel” including ingots and semi-finished iron and steel product, and “articles of iron and steel” including further processed products like rails, tubes, containers, chains, and finished products. The US imported 26 million tons of iron and steel in 2024, making it the top importing country in the world, and 9.4 million tons of articles of iron and steel. Countries vary in terms of what type of steel they exported to the US. For example, China largely exported articles of iron and steel to the US (Figure 2).

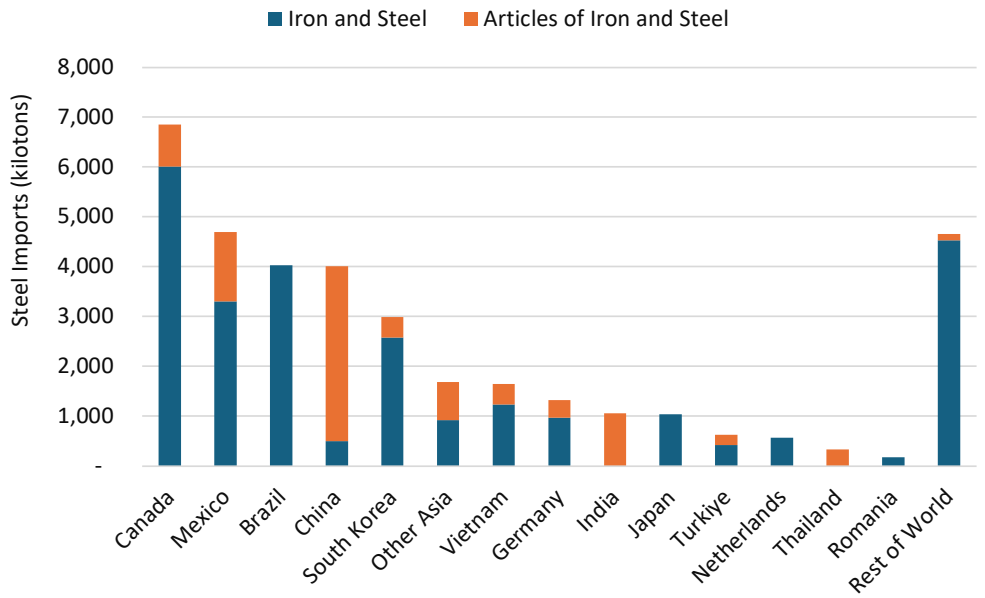
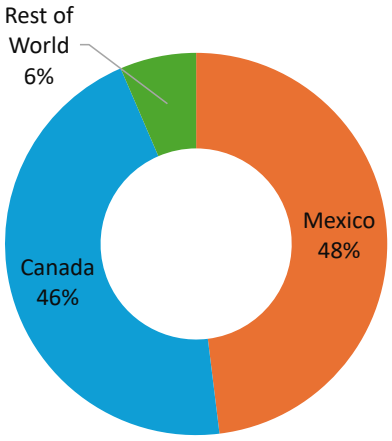


Figure 2: Top countries from which the US imported steel in 2024, by steel type (Source: UN Comtrade 2025)

Note: See Table 1 and Table 2 in Section 3.2 for HS codes of products covered under "iron and steel" and "articles of iron and steel".

The US exported 8 million tons of iron and steel in 2023. The primary destinations for this steel were Mexico (48%) and Canada (46%), with other countries like Brazil, the United Kingdom, and Sweden making up a very small share of the destinations across the rest of the world (Figure 3). Overall, the US is not a major exporter of iron and steel, ranking 16th among steel exporting countries.



Source 3: Exports of iron and steel from the US by destination country (Source: USGS 2024)

3 US Border Carbon Adjustment Policies and the Steel Industry

3.1. Overview of Proposed US Border Carbon Fee Policies

Members of the United States Congress have introduced several different bills designed to develop a border carbon fee framework. This section profiles three major legislative efforts: the Foreign Pollution Fee Act (FPFA), the Clean Competition Act (CCA), and the PROVE IT Act. The first two bills represent different approaches to managing carbon leakage and strengthening US manufacturing sectors, including steel, while the PROVE IT Act would initiate a study on carbon intensities that could be used to inform future trade policies.

Initially introduced in 2023 by Senator Bill Cassidy (R-Louisiana), the FPFA proposes a carbon tariff on imported goods from countries with high emissions intensity and weaker environmental regulations. Unlike the CCA, the FPFA does not impose a domestic carbon price. A revised discussion draft of the FPFA was released in December 2024. The 2025 version of the FPFA, reintroduced with support from Senator Lindsey Graham (R-South Carolina), refines and expands the 2024 draft. The FPFA does not include regulations on or provide incentives for domestic producers.

Reintroduced in 2024 by Senator Sheldon Whitehouse (D-Rhode Island), the CCA proposes a comprehensive carbon border adjustment that includes both a domestic carbon price and import fees. Its broader application could lead to more uniform decarbonization incentives but presents significant implementation and political challenges. Key features of the CCA include a domestic carbon fee that applies to U.S. producers, calculated based on facility-level emissions reporting that would begin in 2026. The bill also establishes a border adjustment mechanism requiring importers to pay fees that reflect the emissions intensity difference between foreign goods and the U.S. average for the same products. The scope of the policy is threshold-based, initially applying to imports of primary goods weighing more than 500 pounds, with the threshold lowering to 100 pounds by 2028.

Both the Foreign Pollution Fee Act and the Clean Competition Act are undergoing further revisions. In addition to these, other carbon border fee proposals are also being discussed, but they remain in the early stages of development.

The PROVE IT (Providing Reliable, Objective, Verifiable Emissions Intensity Transparency) Act, which was reintroduced in the House of Representatives in early 2025, is not a border carbon fee, but it focuses on data transparency that would be foundational to any kind of border carbon fee policy. It directs the Department of Energy to assess and publish emissions intensity data for key goods across major trading partners.

For the steel industry, the PROVE IT Act would establish standardized data on the carbon intensity of steel produced both domestically and internationally. This benchmarking would enable meaningful comparisons between U.S. and foreign production emissions, which is essential for developing defensible and transparent BCA policies. The Act covers countries with significant global market share, key U.S. trade partners, and designated “foreign entities of concern,” ensuring broad international scope.

Both the Foreign Pollution Fee Act (FPFA) and the Clean Competition Act (CCA) raise potential World Trade Organization (WTO) compatibility questions, particularly under rules regarding non-discrimination and environmental exceptions. The FPFA emphasizes national security, transparency, and environmental protection, which could bolster its defense under Article XX of the General Agreement on Tariffs and Trade (GATT). The CCA, by incorporating domestic carbon pricing, may encounter greater scrutiny but also mirrors the EU's CBAM structure, which is already undergoing international review.

3.2. The Foreign Pollution Fee Act and the US Steel Industry

The overall policy design of the FPFA is a tiered, ad valorem carbon tariff. Importers would pay a percentage fee on covered goods, and that fee increases in proportion to how much more carbon-intensive the foreign product is compared to its US-made counterpart. The FPFA was first introduced in the Senate in late 2023. This initial 92-page proposal set out the concept of carbon-differentiated import fees, but it left many implementation details, such as the exact tariff rates, to be determined by the Treasury Department in a future rulemaking (Pomerleau 2023). In December 2024, Senators Cassidy and Graham released an updated discussion draft of the FPFA that incorporated feedback by narrowing the list of covered products and articulating a more concrete fee methodology (including specified tariff rates) compared to the 2023 version (Pomerleau 2025b). After further refinement, the Senators formally reintroduced the bill in the 119th Congress on April 8, 2025, as the Foreign Pollution Fee Act of 2025. As of mid-2025, the FPFA remains pending in Congress – it has been referred to Senate committees but has not yet been the subject of a hearing.

The FPFA's scope centers on energy-intensive industrial commodities. The 2025 bill covers imports of iron and steel, aluminum, cement, glass, fertilizer, hydrogen, as well as certain solar energy components and battery inputs (materials for long-duration energy storage) (Rennert et al. 2025). These sectors are targeted because their production is typically carbon-intensive and they are major elements of global supply chains. In practice, the covered goods correspond to a short list of Harmonized Tariff Schedule codes, or HS codes.

The current proposal envisions the tariff system taking effect by 2026, after a lead time for setting up administrative rules. There is a phased approach: for the first three years of implementation, the law would use a schedule of predetermined tariff rates for various countries and products. In fact, the 2025 bill specifies initial carbon tariff rates for about 25 individual countries (major trading partners and high-emitting economies), while grouping all other nations under a default rate schedule (Pomerleau 2025a). This three-year introductory period provides predictability and allows U.S. agencies to collect data. After that, the fees are to be periodically recalibrated based on updated pollution intensity.

The FPFA also differentiates treatment by country development status. Low-income and lower-middle-income countries would be initially exempt from the fee, recognizing their minimal role in emissions as well as their economic development needs. These developing nations could receive a full exemption for at least five years, and potentially longer if they are adding new production capacity that meets certain low-carbon benchmarks. This grace period is meant to provide technical support and avoid unduly harming poorer economies. However, certain "non-market economies" do not qualify for such exemptions and variable charges are doubled for these non-market economies (see Chapter 4.1). As per FPFA. the term 'nonmarket economy

country' means any foreign country that the Secretary of Commerce determines, pursuant to section 771(18) of the Tariff Act of 1930 (19 U.S.C. 1677(18)), does not operate on market principles of cost or pricing structures, so that sales of merchandise in that country do not reflect the fair value of merchandise (Congress.gov, 2025).

In parallel, the FPFA creates an "International Partnership" program: countries that enter a carbon tariff club with the U.S. (by adopting comparable import measures and environmental standards) can have the fees on their exports reduced or waived. This provision is designed to harmonize policies with allies (such as the EU).

Administratively, the FPFA calls on multiple agencies to implement and enforce the fees. The U.S. Treasury Department is tasked as the lead agency to issue regulations, calculate and collect the import fees, and periodically reassess the program. The Environmental Protection Agency (EPA) and DOE will provide the technical data on production emissions – for example, establishing the U.S. "baseline" carbon intensity for each product and gathering foreign emissions data (potentially using national laboratory analyses). The Department of Commerce is assigned an investigative role: it will identify evasion or circumvention (such as goods routed through third countries or misclassified to dodge the tariff) and formally designate which countries are "non-market economies" under the Act's criteria. The Department of Homeland Security (through Customs and Border Protection) will handle enforcement at US ports of entry, ensuring importers pay the appropriate fee. Finally, the U.S. Trade Representative is empowered to negotiate the aforementioned international partnership agreements with allies.

Between the December 2024 discussion draft and the April 2025 introduced version of the FPFA, several notable changes were made in definitions, methodology, enforcement mechanisms, and tariff structure. One key expansion was in the scope of covered products. The 2024 draft focused on six major sectors (steel, aluminum, cement, glass, fertilizer, and hydrogen). The 2025 version broadened this list to include the solar and battery sectors. Specifically, tariffs would also apply to imported solar components (such as photovoltaic cells/modules) and certain battery inputs for energy storage. The core definition of "pollution intensity" (the emissions per unit of product) and the U.S. "baseline pollution intensity" remained central in both versions, but the new bill places greater emphasis on precise measurement. It outlines standardized data sources and even the treatment of recycled content and carbon offsets in calculating a product's intensity.

The tariff calculation methodology and structure also changed significantly. The 2025 version made the tariff structure more graduated and more severe at the high end (see section 4.1 of the report for more information about variable charge calculation in FPFA).

Enforcement mechanisms and penalties were also strengthened in the 2025 update. Both the draft and final versions envision additional punitive tariffs in certain cases, but the 2025 Act explicitly authorizes multipliers on the fees for strategic reasons. For example, if an import comes from a country designated a "Non-Market Economy" or from a company deemed a foreign entity of concern, the tariff can be doubled or even quadrupled as a sanction. Similarly, while the earlier draft had a general anti-circumvention clause (e.g. if an importer's emissions data was unreliable, the bill assumed a 20% higher carbon intensity by default as a penalty), the 2025 version broadens these enforcement tools. It empowers agencies to raise the tariff "to a level deemed necessary" to deter evasion, granting more open-ended authority to crack down on rerouting products through third countries or mislabeling goods.

Steel is one of the central industries targeted by the Foreign Pollution Fee Act. In fact, steel has frequently been cited in FPFA discussions as a prime example of where the U.S. holds a cleaner production advantage. The tariff applies to a range of iron and steel goods, including raw steel mill products and downstream items like steel pipes or plates, as defined in the covered HTS codes and separated into the categories of “iron and steel” and “articles of iron and steel” (Table 1 and Table 2).

Table 1: Iron and steel HS codes and descriptions covered under the FPFA

HS Code	Description
7206	Iron and non-alloy steel in ingots or other primary forms (excluding iron of heading no. 7203)
7207	Iron or non-alloy steel; semi-finished products thereof
7208	Iron or non-alloy steel; flat-rolled products of a width of 600mm or more, hot-rolled, not clad, plated or coated
7209	Iron or non-alloy steel; flat-rolled products, width 600mm or more, cold-rolled (cold-reduced), not clad, plated or coated
7210	Iron or non-alloy steel; flat-rolled products, width 600mm or more, clad, plated or coated
7211	Iron or non-alloy steel; flat-rolled products, width less than 600mm, not clad, plated or coated
7212	Iron or non-alloy steel; flat-rolled products, width less than 600mm, clad, plated or coated
7213	Iron or non-alloy steel; bars and rods, hot-rolled, in irregularly wound coils
7214	Iron or non-alloy steel; bars and rods, not further worked than forged, hot-rolled, hot drawn or hot-extruded, but including those twisted after rolling
7215	Iron or non-alloy steel; bars and rods, n.e.c. in chapter 72
7216	Iron or non-alloy steel, angles, shapes and sections
7217	Wire of iron or non-alloy steel
7218	Stainless steel in ingots or other primary forms; semi-finished products of stainless steel
7219	Stainless steel; flat-rolled products of width of 600mm or more
7220	Stainless steel; flat-rolled products of width less than 600mm
7221	Stainless steel bars and rods, hot-rolled, in irregularly wound coils
7222	Stainless steel bars and rods, angles, shapes and sections
7223	Stainless steel wire
7224	Alloy steel in ingots or other primary forms, semi-finished products of other alloy steel
7225	Alloy steel flat-rolled products, of a width 600mm or more
7226	Alloy steel flat-rolled products, of a width of less than 600mm
7227	Steel, alloy; bars and rods, hot-rolled, in irregularly wound coils
7228	Alloy steel bars, rods, shapes and sections; hollow drill bars and rods, of alloy or non-alloy steel
7229	Wire of other alloy steel
7301	Iron or steel sheet piling, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel
7302	Railway or tramway track constructions of iron or steel; rails, check and track rails, switch blades, crossing frogs, point rods, sleepers, fish-plates, chair wedges, sole plates, bedplates, ties and the like
7303	Tubes, pipes and hollow profiles, of cast iron
7304	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel
7305	Iron or steel (excluding cast iron); tubes and pipes (e.g. welded, riveted or similarly closed), having circular cross-sections, external diameter of which exceeds 406.4mm, not seamless
7306	Iron or steel (excluding cast iron); tubes, pipes and hollow profiles (not seamless), n.e.c. in chapter 73

Table 2: Articles of iron and steel HS codes and descriptions covered under the FPFA

HS Code	Description
7307	Tube or pipe fittings (e.g. couplings, elbows, sleeves), of iron or steel
7308	Structures of iron or steel and parts thereof; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures
7309	Reservoirs, tanks, vats and similar containers; for any material (excluding compressed or liquefied gas), of iron or steel, capacity exceeding 300l, whether or not lined or heat insulated
7310	Tanks, casks, drums, cans, boxes and similar containers, for any material (excluding compressed or liquefied gas), of iron or steel, capacity not exceeding 300l, whether or not lined or heat-insulated
7311	Containers for compressed or liquefied gas, of iron or steel
7312	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel, not electrically insulated
7313	Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not and loosely twisted double wire, of a kind used for fencing, of iron or steel
7314	Cloth (including endless bands), grill, netting and fencing, of iron or steel wire; expanded metal of iron or steel
7315	Chain and parts thereof, of iron or steel
7316	Anchors, grapnels and parts thereof, of iron or steel
7317	Nails, tacks, drawing pins, corrugated nails, staples (not those of heading no. 8305) and the like, of iron or steel, with heads of other material or not, but excluding articles with heads of copper
7318	Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter-pins, washers (including spring washers) and similar articles, of iron or steel
7319	Sewing and knitting needles, bodkins, crochet hooks, embroidery stilettos and similar articles, for use in the hand, of iron or steel; safety pins and other pins of iron or steel, not elsewhere specified or included
7320	Springs and leaves for springs, of iron or steel
7321	Stoves, ranges, grates, cookers (those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances and parts, of iron or steel
7322	Radiators for central heating, not electrically heated and parts thereof, of iron or steel; air heaters, hot air distributors not electrically heated, with motor fan or blower
7323	Table, kitchen, other household articles and parts, of iron or steel; iron or steel wool; pot scourers and scouring or polishing pads, gloves and the like, of iron or steel
7324	Sanitary ware and parts thereof, of iron or steel
7325	Iron or steel; cast articles
7326	Iron or steel; articles, n.e.c. in chapter 73

3.3. Other Countries and Regions Considering a CBAM Policy

European Union

The European Union (EU) is the only region that is actively implementing a CBAM. The EU Carbon Border Adjustment Mechanism implements a border carbon fee by ensuring imported goods bear a carbon cost equivalent to that paid by EU producers under the EU Emissions Trading System (ETS). Approved by the European Council in 2023 and set for full implementation by 2026, the CBAM is a cornerstone of the EU's Green Deal, which seeks to make Europe the world's first climate-neutral continent by 2050. The mechanism applies to key carbon-intensive sectors, such as steel, aluminum, cement, fertilizers, and electricity. Importers of these goods must purchase carbon certificates corresponding to the embedded emissions in their products, ensuring their costs align with those of EU-based producers subject to the ETS. Since the carbon price under the ETS fluctuates with market conditions, the cost of CBAM certificates will too, maintaining a dynamic and market-responsive system.

Beginning in 2023, the EU initiated a transition period focused solely on collecting emissions data from importers of covered goods. This reporting phase, lasting through 2025, allows businesses and regulators to prepare for the full enforcement of the CBAM in 2026, when importers will start paying for certificates. This gradual approach is essential to easing the transition, helping industries adjust without abrupt financial strain. Notably, the CBAM will progressively replace the free allowances currently granted to EU industries under the ETS, with these subsidies being phased out between 2026 and 2034 (Council of the EU, 2022).

Under the ETS, certain sectors receive free emissions allowances to mitigate carbon leakage risks. These free allocations are benchmarked against the most efficient facilities, incentivizing less efficient producers to cut emissions. Over time, the volume of free allowances is reduced, compelling more industries to purchase allowances at auction and adopt cleaner technologies.

Beyond its environmental objectives, the CBAM carries significant implications for international trade. Major non-EU economies with carbon-intensive industries, particularly China, Russia, India, and Türkiye, have voiced concerns over the policy's potential impact on their exports to the EU. Some of these countries lack equivalent carbon pricing systems (which could offset CBAM costs), and thus their industries, especially steel production, face higher expenses when exporting to the EU. Some critics argue the CBAM could function as trade protectionism, though the EU maintains that its primary goal is climate action, not trade restriction (European Commission, 2023). To address these concerns, the EU has emphasized the CBAM's compliance with WTO rules, framing it as a fair and transparent tool to advance global decarbonization.

The EU introduced a set of targeted amendments to the CBAM in February 2025, aimed at simplifying compliance while maintaining the policy's environmental effectiveness. These changes, developed based on lessons learned during CBAM's Transitional Phase, seek to reduce administrative burdens and better align the mechanism with the EU ETS. Key modifications include a new exemption for small importers bringing in less than 50 tonnes of CBAM goods annually, the exclusion of emissions from finishing processes for steel and aluminum products, and the potential introduction of default carbon pricing values for third countries starting in 2027. The amendments also strengthen enforcement through increased penalties while removing redundant requirements such as reporting emissions from ETS-covered precursors. Several operational adjustments accompany these changes to ease implementation. The annual CBAM reporting deadline has been extended from May 31 to August 31, providing businesses more time to compile accurate emissions data.

While importers will need to account for carbon costs from 2026, the obligation to purchase CBAM certificates has been delayed until 2027. The EU is establishing a digital CBAM registry to streamline data management and will now recognize carbon pricing already paid in third countries. Other practical improvements include reducing the required CBAM certificate holdings from 80% to 50% of emissions, allowing third-party reporting delegation, limiting verification requirements to actual emissions data, and removing non-calcined kaolinic clays from CBAM's scope. The proposed changes are now in the EU's legislative approval process, which is expected to take several months before final adoption.

The steel industry is a key part of the implementation of the EU CBAM, as it is one of the most carbon-intensive industries globally and it is the largest sector by value of covered trade under the EU CBAM. The EU CBAM's impact on the steel industry is expected to incentivize

decarbonization of steel production both within the EU and internationally. Countries like China and India that are major exporters of steel to the EU are expected to face higher costs unless they shift toward cleaner production technologies. In addition, the EU CBAM will likely accelerate the transition toward low-carbon steel production within the EU itself. European steel producers have long been subject to the ETS. However, the allocation of free allowances under the ETS has shielded the steel industry from the full impact of carbon pricing. With the EU CBAM set to replace these free allowances, the key change is that the full carbon cost will be passed on to steel buyers, rather than partially offset by free allocations. This exposes steel customers to the actual carbon price, making lower-carbon options more attractive and indirectly creating greater demand-side pressure for steel producers to decarbonize.

Canada

Canada has not yet introduced a carbon border fee on imports, though the idea has been under study. The federal government signaled interest in exploring border carbon adjustments as early as 2020–2021 (Canada Department of Finance 2021), but so far it relies on its domestic carbon pricing system to address competitiveness. Emissions-intensive, trade-exposed industries in Canada already receive output-based credits or other relief under carbon pricing to mitigate carbon leakage. With the EU's CBAM coming into effect, Canada is actively examining options to prevent carbon leakage, but no formal CBAM policy or legislation has been announced as of mid-2025. Canada's rising carbon price should shield its exporters from EU carbon tariffs, reducing the immediate urgency for a domestic CBAM (Dion 2024).

United Kingdom

The UK is moving forward with its own CBAM now that it operates outside the EU. In 2024 the government held a public consultation on a UK carbon border adjustment, and in October 2024 it confirmed plans to implement a CBAM starting January 1, 2027 (International Carbon Action Partnership 2024). Draft legislation was published in April 2025. The UK CBAM will place a carbon price on imported goods in five carbon-intensive sectors: iron & steel, aluminum, cement, fertilizers, and hydrogen, with glass and ceramics to be included at a later date. This is designed to mirror the EU's approach and ensure imported products face equivalent carbon costs to those faced by UK industries. The new mechanism will be administered by HM Revenue & Customs.

Japan

Japan has not adopted an EU-style CBAM on industrial imports, but it is implementing carbon pricing policies that relate to trade. In 2023, Japan announced plans to study the feasibility of a CBAM, particularly as a tool to protect its industries from the potential impacts of the EU's CBAM and other similar mechanisms. Also in 2023, Japan's government enacted the "GX" (Green Transformation) strategy, which introduces a domestic emissions trading system by 2026 and a carbon levy on fossil fuel importers starting around 2028 (Obayashi, Golubkova, and Obayashi 2023). These measures are intended to cut emissions while maintaining competitiveness for energy-intensive sectors like steel. Japan is also coordinating internationally to address carbon leakage through a climate "Green Alliance" with the EU (Tanabe 2025). Japanese officials aim to have their carbon pricing recognized abroad so that Japanese exports (e.g. steel, cement) are not penalized under schemes like the EU CBAM. Experts in Japan have called for cooperation on global or regional CBAM solutions, but as of 2025 Japan's focus remains on its domestic carbon pricing and aligning it with partners rather than imposing new import fees.

Australia

Australia is currently evaluating a carbon border fee as part of a broader effort to prevent carbon leakage following its strengthened climate policies. In mid-2023, the Australian government commissioned a Carbon Leakage Review to examine additional measures, including whether to implement a carbon border adjustment mechanism (EY 2023). The review's preliminary findings (released November 2024) suggest that a carbon border fee could be introduced for certain emissions-intensive imports – starting with cement and clinker, and later potentially covering products like ammonia, steel, and glass. These sectors are deemed at risk if Australia's industry faces rising carbon costs while importers do not. As of 2025, Australia has not enacted a carbon border fee, but the review indicates a policy direction to "level the playing field" so that imports bear a carbon cost comparable to domestic producers' costs (Carbon Market Institute 2024). This would complement Australia's revamped Safeguard Mechanism (its domestic industrial emissions cap-and-trade system).

4 The Impact of the Foreign Pollution Fee Act on US Steel Trade

4.1. Methodology and Scenarios

Our analysis adopts a data-driven approach to evaluate the potential impact of the FPFA on the U.S. steel industry and trade. It incorporates trade volumes, the carbon intensity of steel production, and the initial year's variable charges based on the FPFA's draft table. For subsequent years, we estimate variable charges using the formula outlined in the Act. This enables us to project how much steel is likely to continue entering the U.S. market after the FPFA is implemented.

The analysis also explores the sensitivity of import volumes to these fees by applying various elasticity scenarios. These scenarios estimate the extent to which steel imports may decline in response to increased costs (see definition of supply and demand elasticity in steel trade below). By focusing on the 2026–2030 period, this study offers a near-term outlook on how the FPFA may reshape U.S. steel trade dynamics. Figure 4 illustrates the analytical framework used in this study.

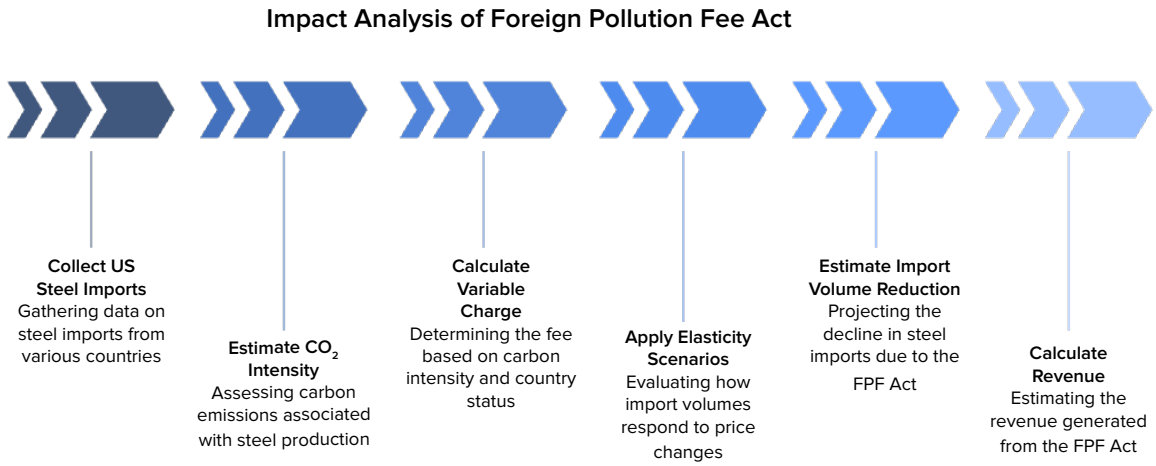


Figure 4: Analytical framework used in this study

US Steel Product Import

The first key component of the analysis is the collection of US steel product import data. Following the HS code-based classifications of "iron and steel" and "articles of iron and steel" described in Tables 1 and 2, we collected US steel import data by country for 2024 from the UN Comtrade database (UN Comtrade 2025). Our analysis distinguishes between flat, long, and other steel products to reflect the diversity of steel imports. This serves as the basis for assessing how the FPFA might impact trade volumes from each country exporting to the United States. We collected the trade data and conducted the entire analysis at the country-level for 19 major countries that export steel to the United States, plus aggregate data from the rest of the world.

CO_2 Intensity and Associated Emissions
Next, we estimated the CO_2 intensity associated with steel production in each exporting country (adapted from Hasanbeigi 2022). The analysis uses separate CO_2 intensities for two primary steel production methods: BF-BOF and EAF steelmaking. For each exporting country, the share of steel produced using BF-BOF and EAF in 2023 is specified, allowing the analysis to estimate the weighted average carbon intensity (ton CO_2 per ton of steel) of the steel imported into the US from that country. We assumed a small reduction in carbon intensity of steel production in each country during the period of 2026-2030. We also made a simplified assumption that flat products are produced by the BF-BOF route and long products are produced by the EAF route. For the "other steel" product category, we used the weighted average carbon intensity of BF-BOF and EAF in each country. While this is mostly true in many countries, it is not always the case. For example, countries like China use the BF-BOF route to produce most steel including flat and long products.

Using this carbon intensity data and assumption of the type of products produced by each production route and the amount of each product type imported by the US in 2024 from the major exporting country, we calculated the total CO_2 emissions associated with steel imports from each country.

Variable Charge
The FPFA introduces a variable charge on imported products based on their country of origin and the carbon intensity of their production. However, the proposed method of calculation differs between the initial implementation period and the longer-term phase following the issuance of final rules.

Initial Period- FPFA proposed approach:
During the initial period (from the effective date until the final rules are published- most likely for the 1st year of FPFA implementation), the variable charge for each imported product is directly determined using predefined values in Table 3.

Table 3: Variable charge in the FPFA for the initial period (values in %)
(Source: Congress.gov 2025)
Note: The values in this table are not used in our analysis for the reasons explained below.

Country of Origin	Iron and Steel	Aluminum	Articles of Aluminum	Glass and Cement	Fertilizer or Hydrogen	Solar Products	Battery Inputs
Canada	26	27	17	27	33	30	31
China	200	143	200	103	121	200	200
Mexico	38	27	45	0	0	100	39
South Korea	47	49	44	58	0	100	35
Germany	9	30	0	0	0	35	0
Taiwan	100	100	100	51	53	100	69
India	100	100	100	100	38	100	46
Vietnam	200	200	200	200	200	200	200
Brazil	55	56	49	57	29	57	30
Japan	29	29	29	34	0	37	0
Italy	0	0	0	0	0	77	0
Thailand	65	38	72	26	23	100	28
Turkey	50	45	57	100	32	100	41
France	0	6	0	0	0	19	0
Spain	0	0	22	35	0	61	9
United Kingdom	0	28	0	0	0	37	0
Netherlands	26	27	0	0	11	34	7
Russia	200	200	200	200	200	0	0
Austria	26	29	0	0	0	39	0
Colombia	32	32	32	0	0	100	0
Israel	0	0	0	0	0	37	0
Hungary	33	28	33	31	0	100	39
Malaysia	71	40	100	33	100	100	100
Poland	39	44	39	45	51	67	52
Cambodia	66	0	66	68	0	0	0
Any other Country	50	40	55	48	69	100	37

Long-Term Application- FPFA proposed approach:
Once the final rules are in place, a tier-based system will be used for a 36-month transition period. Charges will be determined based on the pollution intensity difference (i.e., how much more carbon-intensive a product is compared to the U.S. benchmark).

- Tier 1: Pollution intensity difference >10% and ≤20% ➔ Variable charge: 5%–25%
- Tier 2: Difference >20% and ≤200% ➔ Charge: 25%–80%
- Tier 3: Difference >200% ➔ Charge: 80% plus 1% for every 1% over 200%, up to 100%

The percentage within each tier is calculated linearly, based on how much more polluting the product is compared to the U.S. equivalent.

Adjustments for Certain Conditions:

- Non-market economy countries[1]: Charges are doubled (×2)
- Facilities owned/controlled by a foreign entity of concern[2]: Charges are doubled (×2)
- Both conditions met: Charges are quadrupled (×4)

Special Provisions:

- National Security Exception: The variable charge can be waived to 0% for imports used in Department of Defense contracts.
- Anti-Evasion Enforcement: Charges can be adjusted to counter any detected evasion tactics or carbon fraud.

This study's proposal for variable charges for the initial period:
Upon further investigation, we found that the variable charges proposed in the FPFA table for the initial period are calculated based on the monetary-basis carbon intensity of steel production in different countries (tons CO_2 per dollar of steel industry output). This indicator is not a good representation of the actual carbon intensity of steel production in different countries. Instead, physical-basis carbon intensity (tons CO_2 per ton of steel) should be used, as it more accurately reflects the CO_2 emissions intensity of a country's steel industry.

In addition, while the calculations in the table appear to emphasize maximizing FPFA revenue, they give less weight to other important impacts of the policy, such as the reduction in steel imports, the capacity of domestic producers or alternative sources to replace reduced imports, the magnitude of the charges, and the equivalent carbon prices imposed.

All calculations in this report are based on physical-basis carbon intensity. Therefore, we used the FPFA tier system formula along with physical-basis carbon intensity data for steel production in each country to estimate the variable charge in the initial period and compared these estimates to the values given in the FPFA table. We found large discrepancies between the variable charges calculated using the FPFA formula and physical-basis carbon intensity data, and the fixed values provided in the table by FPFA.

Figure 5 illustrates the projected import charges (variable charges) in 2026 under the Foreign FPFA as a percentage of the steel import price for various countries. The chart shows two variable charges levels for each country:

- the VC in 2026 based on the table provided in the FPFA for the initial period
- VC calculated in this study using the FPFA tier system and physical-basis carbon intensities data (ton CO_2/ton steel) after applying adjustments for non-market economy.

1 According to The International Trade Administration, U.S. Department of Commerce, here is the list of non-market economy countries: Armenia, Azerbaijan, Belarus, China, Georgia, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan, and Vietnam (U.S. DOC/ International Trade Administration 2025)

2 A foreign entity is defined as a "foreign entity of concern" if it is "owned by, controlled by, or subject to the jurisdiction or direction of a government of a foreign country that is a covered nation." Covered nations are defined as China, Russia, Iran, and North Korea (U.S. Department of Energy 2024b).

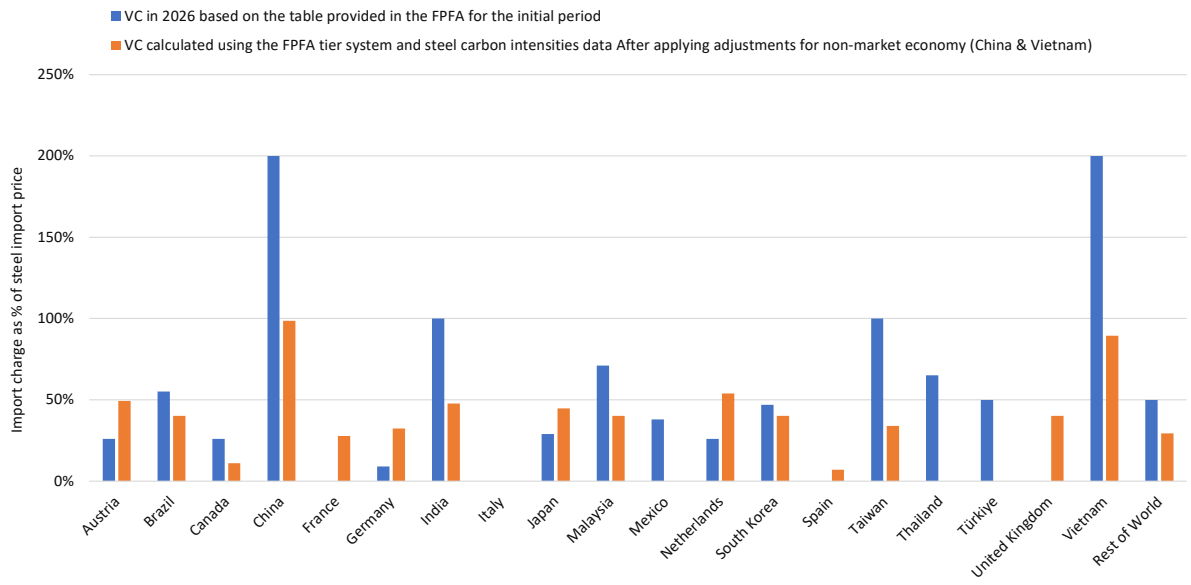


Figure 5: Import charge in 2026 as a percentage of the steel import price for various countries

The recalculated VCs are higher than the FPFA table values for Austria, France, Germany, Japan, the Netherlands, Spain, and the United Kingdom, reflecting either higher relative carbon intensities or the removal of country-specific discounts present in the FPFA table. In contrast, the recalculated VCs are lower for Brazil, Canada, China, India, Malaysia, Mexico, South Korea, Taiwan, Thailand, Türkiye, Vietnam, and the Rest of World, indicating that the FPFA table values in these cases are set above what FPFA tier-system calculation would yield based on physical-basis carbon intensity data.

Import charges are highest for China and Vietnam. In addition to being carbon-intensive steel producers, China and Vietnam are designated as non-market economies and entities of concern, adding to their variable charge as described above.

Based on this analysis, we estimated the impact of the FPFA using the calculated variable charges derived from the FPFA tier-system method and physical-basis carbon intensity data for both the initial period and the longer-term application of the FPFA. We did not use the values proposed in the FPFA table for the initial period, as we believe those values do not accurately represent the carbon intensity of steel production in different countries.

Import Fees, Elasticity, Reduction in Import Volumes, and Revenue

We calculated the import fee per ton of steel for each country exporting steel to the U.S. and evaluated how this fee might reduce import volumes annually from 2026 to 2030. The import charge ($/ton of steel) reflects the additional cost imposed under the FPFA, which varies depending on the carbon intensity of the steel.

To assess the impact of these fees on steel trade, we applied average elasticity values for steel supply and demand. Elasticity in this context measures how responsive the quantity of steel imported is to price changes. A higher elasticity indicates that a small increase in price causes a significant drop in quantity imported, while a lower elasticity means imports are less sensitive to price changes. In essence, elasticity helps estimate how much U.S. steel imports might decline as imported steel prices rise due to the FPFA.

Our analysis includes four elasticity scenarios to reflect varying degrees of responsiveness:

1. Scenario 1: Elasticity of -0.5 (least responsive; a 20% price increase leads to a 10% drop in imports)
2. Scenario 2: Elasticity of -0.7
3. Scenario 3: Elasticity of -1.0
4. Scenario 4: Elasticity of -1.3 (most responsive; a 20% price increase leads to a 26% drop in imports)

Each scenario illustrates the potential decline in import volumes based on different assumptions about price sensitivity. For example, under Scenario 4, even modest import fees would result in a significant reduction in import volumes, whereas Scenario 1 shows the smallest effect.

Impact on Steel Imports and Trade
We estimated both annual and cumulative reductions in U.S. steel imports resulting from the FPFA. Reductions were aggregated across all exporting countries under each elasticity scenario. In addition to total volume reductions, we also calculated each country's cumulative percentage reduction in exports to the U.S., compared to 2024 levels. This percentage highlights the relative impact of the FPFA on different exporters. Countries with high carbon intensity, such as India and China, or those classified as non-market economies or countries of concern are expected to see the greatest declines in exports to the U.S.

FPFA Import Revenue
To estimate revenue from the FPFA for steel products, we multiplied the import fees, based on the variable charge assigned to each country (calculated from the difference between that country's carbon intensity and the U.S. benchmark), by the post-FPFA steel import volume from each country, adjusted for the expected reduction due to the fee.

4.2. The Impact of Foreign Pollution Fee Act

Based on the method explained above, we calculated the projected impact of the FPFA on steel trade, focusing on how different elasticity assumptions influence the volume of steel imports into the US and the revenue generated by the FPFA from the steel sector. We find that the FPFA could significantly reduce steel import volumes, with a projected 34% reduction in 2026 relative to 2024 levels, equating to a decrease of 12,730 kton of imported steel under elasticity scenario -1:0.

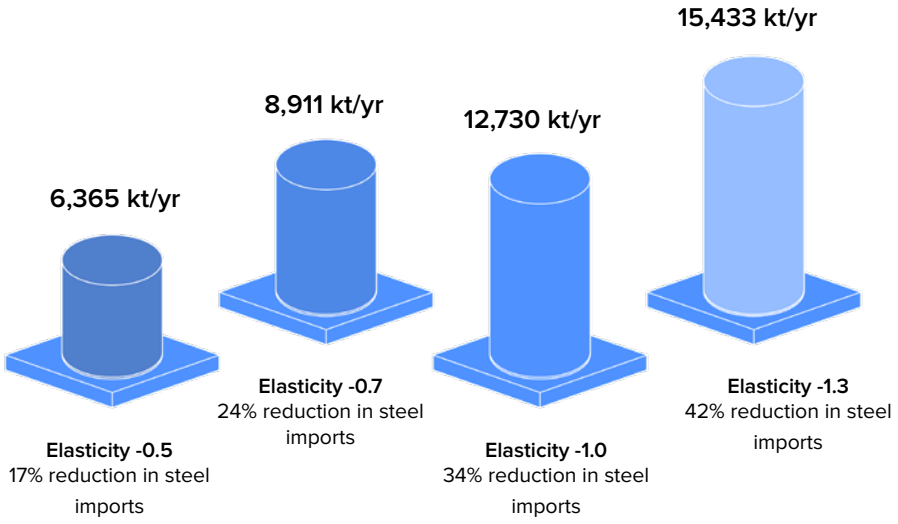


Figure 6: Reduction in the US steel imports in 2026 compared to 2024 import level from current steel suppliers due to the FPFA under different elasticity scenarios (Source: this study)

We also estimated the reduction in the US steel imports from each country in 2026, expressed as a percentage of 2024 import levels, under an import demand elasticity of –1.0 (Figure 7). The results indicate substantial declines for several major exporters, with the largest reductions for China (–95%) and Vietnam (–85%), driven by high carbon intensities and non-market economy adjustments under the FPFA. Significant declines are also projected for the Netherlands (–54%), Austria (–49%), India (–48%), and Japan (–45%). Moderate reductions are seen for countries like Brazil, Malaysia, South Korea, and the United Kingdom (all –40%), while Canada (–11%) and Spain (–7%) face relatively small decreases. No reduction is projected for Italy, Mexico, Thailand, or Türkiye, reflecting their lower average carbon intensity of steel production compared to that of the US. Overall, the FPFA is expected to sharply curtail imports from most countries currently supplying steel to the U.S., unless exemptions or agreements are made with those countries, while having limited impact on cleaner suppliers.

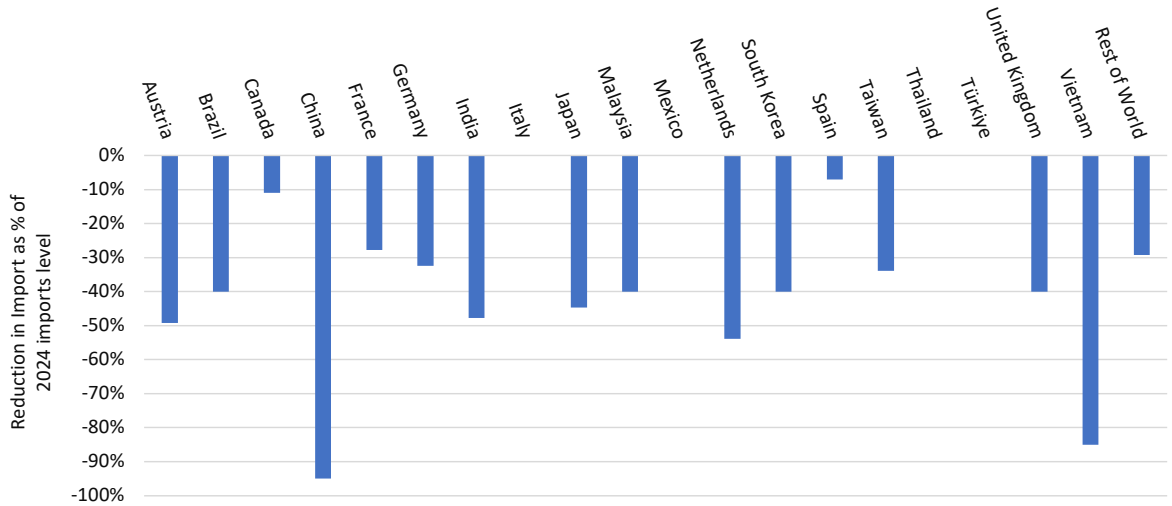


Figure 7. Annual reduction in US imports from each country in 2026 as % of 2024 import level under

elasticity -1.0 (Source: this study)

Figure 8 illustrates the projected revenue from the FPFA annually between 2026 and 2030. Revenues range from approximately $2.6 billion to $5.8 billion in 2026 depending on the elasticity of imported steel demand, and stabilizing in the range of $3 billion to $7.8 billion by 2030. Revenues are lower under the high elasticity scenarios because when import demand is more elastic, importers are more responsive to price increases, meaning that the carbon-based fee imposed under the FPFA leads to a sharper reduction in import volumes. Since the FPFA generates revenue only when imports are taxed, a drop in import volumes directly reduces the revenue base.

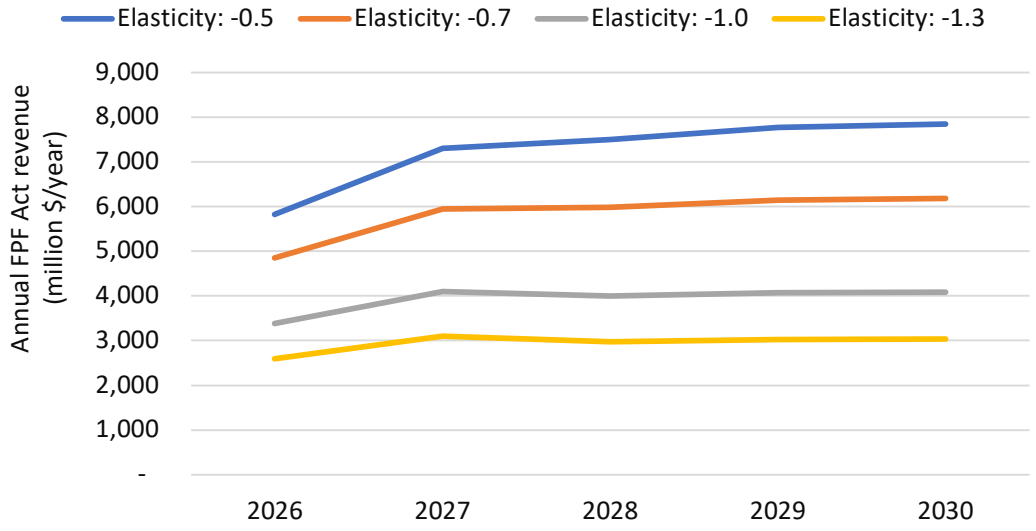


Figure 8: Annual revenue from the FPFA from imported steel across elasticity scenarios, 2026-2030 (Source: this study)

The cumulative revenue of FPFA increases substantially over the 5-year period. Figure 9 shows cumulative revenue over the study period, showing that by 2030, the FPFA could generate between $14.7 billion and $36.3 billion in revenue from carbon-based fees on steel imports, depending on the import demand elasticity.

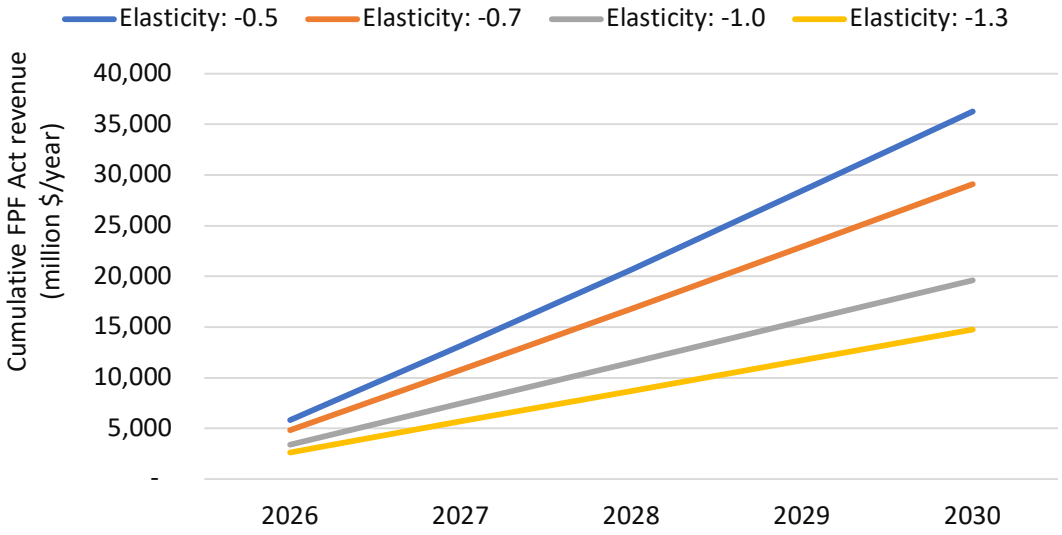


Figure 9: Cumulative FPFA revenue from imported steel across elasticity scenarios, 2026-2030

(Source: this study)

We also estimated the equivalent carbon price imposed by the FPFA on steel exports to the U.S., using the country-specific variable charge and the carbon intensity of steel production across various countries (Figure 10). China and Vietnam face the highest import charges under the FPFA. As discussed earlier, both countries export carbon-intensive steel to the U.S. and are assigned non-market economy designations that increase their variable charge, thereby raising the equivalent carbon price. In contrast, lower-carbon producers such as Canada, Spain, Türkiye, and Thailand face relatively low or no equivalent carbon prices, consistent with their lower-emission steelmaking profiles.

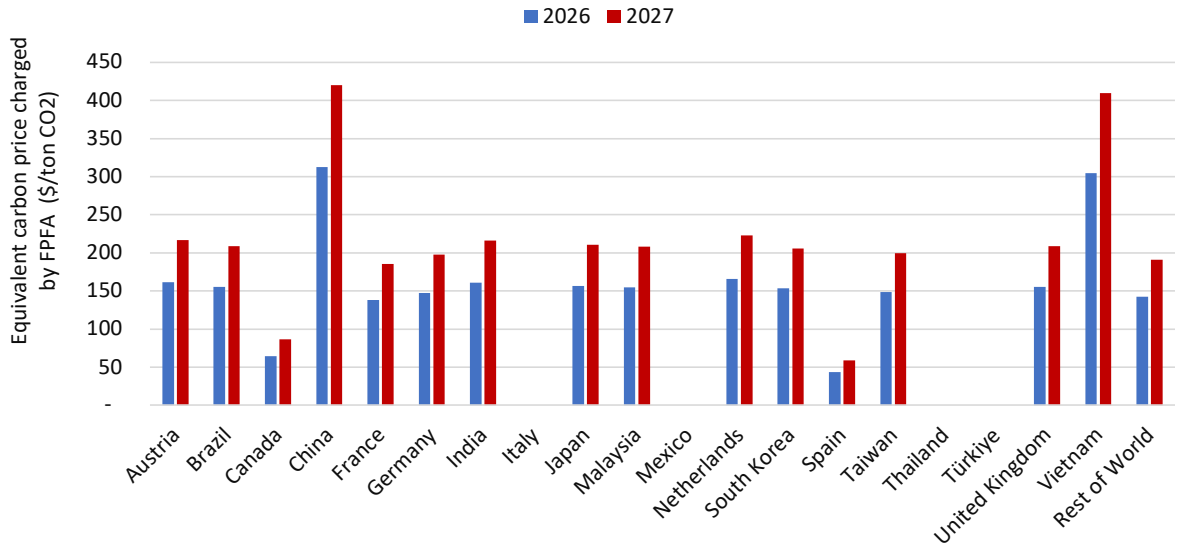


Figure 10: Calculated equivalent carbon price charged by the FPFA on steel imported from various countries (Source: this study)

Our findings indicate that the introduction of the US FPFA could significantly reshape the steel trade by gradually reducing the volume of carbon-intensive steel imports into the US market. These reductions are more pronounced under scenarios of high import elasticity, where foreign producers or US buyers more readily shift away from high-emission sources in response to the fee. Conversely, if import elasticity is low, the US continues importing larger volumes of carbon-intensive steel, resulting in higher revenue generation from the fee. The substantial potential for import reductions by 2030 under high-elasticity conditions underscores the FPFA's potential to exert a disruptive, yet carbon-based, influence on international supply chains. If effectively implemented, the FPFA could serve as a powerful incentive for foreign steel producers to adopt lower-carbon technologies. Those that fail to decarbonize will face mounting barriers to accessing the U.S. market.

5 The Foreign Pollution Fee Act and Interactions with Other Steel Tariffs

The trade and tariff landscape in the United States is currently highly volatile, with frequent and often abrupt policy shifts under the current administration. New tariffs, exemptions, and trade measures are being introduced or revised with little notice. This chapter reflects the best available information at the time of writing. However, given the pace of change, some policies or measures discussed here may have changed by the time this report is published. Readers are advised to consult the latest official sources for the most up-to-date information.

5.1. Section 232 Tariffs and Other Tariffs Possibly Affecting Steel Imports

Section 232 tariffs refer to tariffs imposed based on authority of the Trade Expansion Act of 1962, which provides a process for the U.S. government to investigate whether imports of certain goods threaten national security. The Trump administration invoked Section 232 in 2018 to impose a 25% tariff on steel imports, citing concerns that the domestic steel industry was weakened by foreign competition and excess global capacity, particularly from China. Recent studies have projected that global excess steel capacity could reach 630 million tons by 2026 (EUROFER 2024b). This is equivalent to 8 times the US crude steel production in 2023. China's steel export overcapacity is an estimated at 110 million tons in 2024. In addition and related to economic concerns, the stated objective of the Section 232 steel tariffs was to ensure critical industries such as defense and infrastructure, which rely on domestically produced steel, did not become overly dependent on foreign imports. This dependency, according to the administration, posed a national security risk by making the U.S. vulnerable to supply disruptions in times of conflict or crisis (Office of the U.S. Trade Representative, 2018).

Several countries and regions negotiated exemptions or adjustments to the Section 232 tariffs. Canada and Mexico, both significant steel exporters to the U.S., were initially subject to the tariffs but later secured exemptions as part of the United States-Mexico-Canada Agreement (USMCA) negotiations. In exchange, these countries agreed to implement measures to prevent transshipment of steel from third countries through their borders into the U.S. without paying the tariffs. Additionally, Brazil, South Korea, and Argentina reached agreements with the U.S. to avoid the 25% tariffs by accepting a tariff rate quota (TRQ) that limits the volume of steel they can export to the U.S. annually. Later, Japan and the UK also negotiated TRQs with the Biden administration. In 2021, the U.S. and EU reached a temporary deal to replace the Section 232 tariffs on steel and aluminum with a tariff-rate quota system, which allows a certain amount of duty-free steel imports from the EU each year while maintaining tariffs on quantities that exceed the agreed quota (USITC, 2021).

In early 2025, President Trump announced 25% tariffs on all imported steel and aluminum with no country-specific exemptions and alternative quota agreements. In mid-2025, The Trump Administration announced it would double Section 232 steel and aluminum tariffs from 25 percent to 50 percent, effective June 4, 2025 (with a 25 percent carve-out for the UK). The new rate would heavily impact traditional trading partners like Canada, Brazil, South Korea, Mexico, and Vietnam, and is expected to sharply deter exports from the EU.

Section 301 of the Trade Act of 1974 empowers the President (via the USTR) to impose tariffs to counter a foreign country's unfair trade practices. The Trump Administration originally used this law in 2018 to levy tariffs on China for intellectual property and technology transfer abuses. Those Section 301 tariffs on China remain in effect in 2025, covering about $370 billion in Chinese imports. The Section 301 tariffs apply to a broad array of Chinese-origin goods, including consumer products, electronics, machinery, and some steel-containing products (such as appliances or tools). A product exclusions process has largely been phased out, although limited exemptions for certain products remain in place.

The Section 301 tariffs and the Section 232 steel tariffs operate in parallel, and an import can potentially be subject to both if it falls under each program's scope. In practice, raw steel mill products from China (e.g. flat steel, pipe, etc.) are primarily covered by the global 232 steel tariff (50%), not by the 301 lists. Meanwhile, finished goods that contain steel (but are classified as other products) may incur the 25% Section 301 duty. If an item is classified under a 232-covered steel category, the 232 tariff takes priority (Pike et al. 2025). Legally, the Section 301 tariffs have been subject to a large-scale court challenge. The Court of International Trade ruled in 2023 that USTR's actions were permissible (after a remand for explanation), and the case is now on appeal. The Court of Appeals for the Federal Circuit heard oral arguments in January 2025, but as of mid-2025 no final decision has issued (GDLSK 2025).

In early 2025, President Trump invoked emergency powers under the National Emergencies Act (NEA) and the International Emergency Economic Powers Act (IEEPA) to impose new tariffs targeting China, Mexico, and Canada, citing links to illicit drug trafficking and migration. These IEEPA tariffs include a 20% duty on all imports from Mexico and Canada that do not meet USMCA rules of origin, such as products incorporating Chinese steel, while most steel that qualifies under USMCA remains duty-free. China was hit with a 10% emergency tariff on all imports in February 2025, which was subsequently doubled to 20% in March 2025, in addition to preexisting Section 301 tariffs. To avoid double taxation with Section 232 tariffs, covered goods from Canada and Mexico are only subject to the higher of the two tariffs. In practice, Chinese steel is subject to both the 50% Section 232 tariff and the additional 20% IEEPA emergency tariff, meaning these measures stack rather than substitute, further raising the overall duty on Chinese-origin steel imports. Although a U.S. Court of International Trade panel ruled on May 28 that these IEEPA emergency tariffs (along with the reciprocal tariffs discussed below) were unlawful, they remain in effect as of mid-2025 pending appeals (Foley Hoag 2025).

President Trump declared a sweeping national emergency over the U.S. goods trade deficit in April 2025. On April 2, 2025 he signed an executive order that imposed what the White House called a "reciprocal tariff" on nearly all imports. The 2025 reciprocal tariff program was introduced in two phases. First, beginning April 5, the U.S. imposed a universal 10% ad valorem tariff on nearly all imports, regardless of product or country of origin, with only limited exemptions. The second phase targeted specific countries with large trade surpluses or tariff imbalances. Originally scheduled to begin April 9, it proposed country-specific tariff hikes ranging from 11% to over 50%, with the exact rate tied to each country's trade surplus with the United States. Implementation of the higher tariffs was paused for 90 days, until July 9, to allow for negotiations. In early July, that deadline was pushed to August 1, 2025. During this period, the baseline 10% tariff remains in effect for all countries. The reciprocal tariffs explicitly exempt imports already subject to Section 232 steel and aluminum tariffs.

Exact implementation details are rapidly changing as various countries negotiate with the US about these various tariffs. As many developments were announced close to publication of this report, we have not incorporated their potential impacts into the present analysis.

5.2. Potential Interactions of the FPFA and Section 232 Tariffs

A key remaining question for understanding the future of US steel production and trade is how a potential FPFA would interact with Section 232 and any other tariffs on steel. The bill's authors explicitly envision it "operating" in parallel with Section 232 and Section 301 tariffs, as well as antidumping and countervailing duties", to level the playing field on multiple fronts (Office of Senator Bill Cassidy 2025). Nothing in the FPFA's summary indicates an intent to repeal or override existing 232 measures; instead, it "adds an environmental dimension" that complements those other trade policies, independently justifying a tariff on the same goods for different reasons.

Administratively, layering the FPFA atop Section 232 would pose implementation challenges, but the proposal includes mechanisms to manage them. The act calls for a "secure and transparent policy framework" with clear statutory authority, aiming to provide more predictability than ad-hoc tariffs. It mandates enforcement and anti-circumvention measures (e.g. requiring importers to document the carbon intensity of their supply chain, with traceability rules and anti-evasion authority for the Commerce Department). There could, however, be points of friction in simultaneous implementation. Section 232 proclamations in 2025 removed all country exemptions in favor of a uniform global tariff, whereas the FPFA differentiates treatment, including exemptions for imports deemed critical to national defense or from countries that join a climate-based trade partnership.

Stacking a carbon border fee on top of existing Section 232 duties would amplify the cost on affected imports. Analyses by the American Action Forum (AAF) project that if the FPFA were enacted on top of current tariffs, it could raise roughly $134 billion in additional revenue over 10 years, whereas enacting it in isolation (with no Section 232 or other tariffs) might raise about $185 billion (Pomerleau 2025a). The lower revenue in the "stacked" scenario reflects an expectation of drastically reduced import volumes when multiple tariffs compound. Recognizing the potential economic and legal issues of overlap, policymakers and experts have begun discussing how a carbon border fee could be coordinated with traditional tariffs.

One approach is to embed FPFA-style charges within broader trade agreements, turning a unilateral tool into a cooperative one. For example, during the Biden Administration, the U.S. and EU negotiated a framework called the Global Arrangement on Sustainable Steel and Aluminum (GASSA), which aimed to use trade measures to reward lower-carbon production. The idea was effectively to convert the Section 232 tariffs into a partnership-based arrangement. Progress on GASSA stalled by late 2024, nonetheless, the concept remains a template for coordinating tools.

One potential policy pathway is for Congress to grant the executive flexibility: for example, if a foreign partner implements equivalent carbon fees, the President could suspend Section 232 tariffs on that country. Conversely, if Section 232 tariffs are deemed to be achieving climate aims (by discouraging imports of high-pollution steel), an FPFA charge might be reduced to avoid redundancy. Or, the FPFA could simply act as an additional tariff layered atop security tariffs, in which case careful administrative coordination will be needed to manage overlapping duties, avoid double-counting emissions, and handle refund processes if one tariff is lifted.

If the FPFA is implemented, the Section 232 tariffs as well as the EU CBAM and other emerging border carbon fees could interact and change global steel trade. The Section

232 tariffs will likely discourage producers of high-carbon steel that are affected by the EU CBAM from diverting their products to the U.S. market. The tariff is likely to be a larger financial burden than the EU CBAM fees in the early years of the EU's policy implementation (Hasanbeigi et al. 2025). Furthermore, the fact that low-carbon steel would also face the same tariff as high-carbon steel under Section 232 could hinder the U.S.'s ability to import cleaner steel as it becomes more available globally. As global efforts to decarbonize the steel industry accelerate, countries like China may shift a portion of their production to H_2-DRI or EAF methods to comply with the EU CBAM and other environmental policies. In the future, these decarbonized steel products may find it easier to access the EU market, where the trade barrier reflects the carbon intensity of the product. However, in the United States, even low-carbon steel would face a 50% tariff, making the U.S. market less attractive for both clean and carbon-intensive steel exports.

6 Conclusion and Recommendations

The results of this study show that the FPFA has the potential to significantly reduce carbon-intensive steel imports to the United States, reshaping global trade patterns while reinforcing domestic efforts to produce low-carbon steel. Under high elasticity scenarios where importers are more sensitive to price increases, the FPFA could cut steel imports by as much as 42% in the first year of implementation (2026 in this study) compared to 2024 levels. This equates to a reduction of approximately 15.4 million metric tons of imported steel. The annual reductions in import slightly increase in subsequent years, suggesting that the FPFA could fundamentally alter long-term import behavior in the steel sector.

This study does not analyze how reduced imports might be compensated. However, with U.S. raw steel production capacity at 107 Mt in 2024 and actual output at 81 Mt (USGS 2025), there is room for domestic producers to expand. In addition, part of the gap could be filled by shifting to steel supplies from countries with lower-carbon production.

Revenue implications vary depending on the elasticity of import demand. In 2026, FPFA-generated annual revenue from steel imports could range between $2.6 billion to $5.8 billion, with cumulative revenue rising to between $14.7 billion and $36.3 billion by 2030. Lower elasticity scenarios where importers are less responsive to the carbon fee yield higher revenues because more high-emissions steel continues to enter the U.S. market and is thus taxed. However, as cleaner alternatives become more competitive or U.S. production increases, the revenue base narrows.

Country-level estimates further illustrate the FPFA's targeted impact on carbon-intensive exporters. Steel imports from China and Vietnam would face the highest import charges, both in dollar terms and as a share of product value. This is due to their high production emissions and additional policy-based markups from U.S. designations as non-market economies. The resulting effective carbon price varies significantly across exporters.

Internationally, the FPFA belongs to the same category of carbon border adjustment policies as the EU CBAM as well as policies under development in the UK and Canada. Questions remain about how the FPFA, if implemented, would interact with Section 232 and potential broad tariffs in the United States. However, the policy environment is rapidly changing, and we did not explicitly model such interactions in this study.

The implementation of a border carbon fee policy in the U.S. would require careful consideration of its design to reflect domestic carbon benchmarks, domestic production capacity, elasticity of supply and demand, compatibility with international trade agreements, and its potential to incentivize innovation and investment in low-carbon technologies. To enhance transparency and predictability, the administrative complexity of the FPFA could be streamlined by adopting harmonized international methodologies as much as possible, leveraging existing emissions databases, and reducing the number of discrete tariff tiers. Providing clear implementation timelines and simplifying exemption categories would further support smooth enforcement. Objective and transparent criteria for determining variable charges could also enhance the predictability of the FPFA, focusing on emissions data and policy alignment.

For the initial period of FPFA implementation, the variable charge calculation should be based on physical-basis carbon intensity (tons CO_2 per ton of steel) rather than the fix values currently given in the table in FPFA, which are based on the monetary-basis carbon intensity (tons CO_2 per dollar of steel output). Physical-basis metrics more accurately reflect the actual emissions profile of steel production in each country and would produce charges that are better aligned with the policy's environmental objectives. In addition, FPFA design should consider broader impacts beyond revenue generation, including the potential reduction in imports, the ability of domestic or alternative suppliers to meet demand, the magnitude of imposed charges, and the equivalent carbon prices. Using the tier-system formula with physical-basis carbon intensity data from the outset would improve fairness, transparency, and the policy's effectiveness in incentivizing low-carbon steel production.

The FPFA currently uses a single variable charge tier system for all sectors and products, which simplifies administration but fails to reflect key differences in carbon intensity, trade elasticity, and production methods across industries. As a result, essential imports even from lower-carbon sources may decline sharply, disrupting supply chains for U.S. industries like construction and automotive. To address this, the FPFA should adopt sector-specific charge formulas that account for differences across industry sectors and how and to what extent the policy may impact trade in each sector.

Given the EU CBAM and global border carbon policies under consideration, alignment between the U.S. and its key partners, especially the EU, will be increasingly important. This could involve encouraging interoperability between calculation methodologies, recognizing each other's verification systems and establishing bilateral frameworks to minimize redundancy and compliance costs.

References

Canada, Department of Finance. 2021. “Archived - Exploring Border Carbon Adjustments for Canada.” August 5, 2021. https://www.canada.ca/en/department-finance/programs/consultations/2021/border-carbon-adjustments/exploring-border-carbon-adjustments-canada.html.

Carbon Market Institute. 2024. “Level the Playing Field to Accelerate Australia’s Industrial Transition.” Carbon Market Institute (blog). November 1, 2024. https://carbonmarketinstitute.org/2024/11/01/level-the-playing-field-to-accelerate-australias-industrial-transition/.

Congress.gov, 2025. Foreign Pollution Fee Act of 2025. Available at https://www.congress.gov/bill/119th-congress/senate-bill/1325/all-info

Cosbey, A. (2023). Border Carbon Adjustments: Pivotal design choices for policy-makers. International Institute for Sustainable Development (IISD).

Dion, Stephane. 2024. “Carbon Pricing as an Asset for Canadian Exports to Europe.” Presented at the Journée de réflexion 2024 of the Chaire en fiscalité et en finances publiques, Université de Sherbrooke, June 12. https://www.international.gc.ca/country_news-pays_nouvelles/2024-06-13-france.aspx?lang=eng.

EY. 2023. “Australia Considers CBAM to Address Carbon Leakage.” EY. 2023. https://www.ey.com/en_gl/technical/tax-alerts/australia-considers-cbam-to-address-carbon-leakage.

Foley Hoag. 2025. “The U.S. Court of International Trade Struck Down President Trump’s IEEPA Tariffs – What Happens Now?” 2025. http://foleyhoag.com/news-and-insights/publications/alerts-and-updates/2025/june/the-u-s-court-of-international-trade-struck-down-president-trump-s-ieepa-tariffs-what-happens-now/.

GDLSK. 2025. “China Section 301 Litigation Timeline (Updated 01/08/2025).” GDLSK (blog). 2025. https://www.gdlsk.com/china-section-301-litigation-update/.

Hasanbeigi, Ali. 2022. “Steel Climate Impact: An International Benchmarking of Energy and CO2 Intensities.” Global Efficiency Intelligence. https://www.globalefficiencyintel.com/steel-climate-impact-international-benchmarking-energy-co2-intensities.

Hasanbeigi, Ali, Cecilia Springer, and Pinchookorn Chobthiangtham. 2025. “The Impact of the EU CBAM on Global Steel Trade.” Global Efficiency Intelligence. 2025. https://www.globalefficiencyintel.com/the-impact-of-the-eu-cbam-on-global-steel-trade.

International Carbon Action Partnership. 2024. “UK Outlines Details for Carbon Border Adjustment Mechanism Introduction from 2027.” ICAP. November 13, 2024. https://icapcarbonaction.com/en/news/uk-outlines-details-carbon-border-adjustment-mechanism-introduction-2027.

Nucor Corporation. (2024). Circularity in Steel, Part 1: The History of Electric Arc Furnace (EAF). https://nucor.com/newsroom/circularity-in-steel-part-1-the-history-of-electric-arc-furnace-eaf

Obayashi, Yuka, Katya Golubkova, and Yuka Obayashi. 2023. “Explainer: Japan’s Carbon Pricing Scheme Being Launched in April.” Reuters, March 31, 2023, sec. Carbon Markets. https://www.reuters.com/markets/carbon/japans-carbon-pricing-scheme-being-launched-april-2023-03-30/.

Office of Senator Bill Cassidy. 2025. “Frequently Asked Questions: Foreign Pollution Fee Act of 2025.” https://www.cassidy.senate.gov/wp-content/uploads/2025/04/Foreign_Pollution_Fee_FAQs_2025.pdf.

Pike, Damon, Mathew Mermigousis, and James Pai. 2025. “Section 232 Tariffs on Steel and Aluminum Doubled and Related Developments.” BDO (blog). June 10, 2025. https://www.bdo.com/insights/tax/section-232-tariffs-on-steel-and-aluminum-doubled-and-related-developments.

Pomerleau, Shuting. 2023. “What’s in Senator Cassidy’s Foreign Pollution Fee Bill? - Niskanen Center.” Niskanen Center - Improving Policy, Advancing Moderation (blog). November 29, 2023. https://www.niskanencenter.org/whats-in-senator-cassidys-foreign-pollution-fee-bill/.

Pomerleau, Shuting. 2025a. “The 2025 Foreign Pollution Fee Act: Revenue Effect and Analysis.” AAF (blog). 2025. https://www.americanactionforum.org/insight/the-2025-foreign-pollution-fee-act-revenue-effect-and-analysis/.

Pomerleau, Shuting. 2025b. “The New Foreign Pollution Fee Act.” AAF (blog). 2025. https://www.americanactionforum.org/insight/the-new-foreign-pollution-fee-act/.

Rennert, Kevin, Mun Ho, Katarina Nehrkorn, and Milan Elkerbout. 2025. “Projected Effects of the Foreign Pollution Fee Act of 2025.” Resources for the Future. https://www.rff.org/publications/issue-briefs/projected-effects-of-the-foreign-pollution-fee-act-of-2025/.

SteelWatch. (2024). Why the auto industry doesn’t need blast furnace steel.

Tanabe, Yasuo. 2025. “‘Carbon Pricing, Carbon Border Adjustment Mechanism (CBAM) and Green Transition’, Taking CBAM as an Opportunity, Japan Should Aim to Cooperate with the EU to Create a Global Carbon Market.” Research Institute of Economy, Trade, and Industry (blog). 2025. https://www.rieti.go.jp/en/columns/a01_0783.html.

UK Steel. 2024. Electric Arc Furnaces and Product Ranges. https://www.uksteel.org/electric-arc-furnaces-1

UN Comtrade Database, 2025. Trade Data. Available at: https://comtradeplus.un.org/TradeFlow

U.S. Department of Commerce, International Trade Administration, 2025. Countries currently designated by commerce as non-market economy countries. https://www.trade.gov/nme-countries-list

U.S. Department of Energy. 2023. “Pathways to Commercial Liftoff: Industrial Decarbonization.”

U.S. Department of Energy. 2024a. “Transformative Pathways for U.S. Industry: Unlocking American Innovation.”

U.S. Department of Energy. 2024b. Foreign Entity of Concern Interpretive Guidance. https://www.energy.gov/mesc/foreign-entity-concern-interpretive-guidance

U.S. Geological Survey. 2025. “Iron and Steel - Mineral Commodity Summary.” https://pubs.usgs.gov/periodicals/mcs2025/mcs2025-iron-steel.pdf.

Whitehurst, Lindsay, and Josh Boak. 2025. “Federal Court Blocks Trump from Imposing Sweeping Tariffs under Emergency Powers Law.” AP News. May 28, 2025. https://apnews.com/article/trump-tariffs-trade-court-0392dbd59f548e49ad4f64254ae3f94a.

worldsteel association. 2025a. “Total Production of Crude Steel.” Worldsteel.Org (blog). 2025. https://worldsteel.org/data/annual-production-steel-data/?ind=P1_crude_steel_total_pub/MMR.

worldsteel association. 2025b. “World Steel in Figures 2025.” Worldsteel.Org (blog). 2025. https://worldsteel.org/data/world-steel-in-figures/world-steel-in-figures-2025/.