CLIMATE LEADERSHIP COUNCIL

THE GLOBAL ARRANGEMENT FOR SUSTAINABLE STEEL AND ALUMINUM & NEW OPPORTUNITIES FOR CLIMATE COOPERATION

CATRINA RORKE AND MATTHEW C. PORTERFIELD

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ABOUT THE AUTHORS

Catrina Rorke serves as executive director of the Center for Climate and Trade and senior vice president, policy and research at the Climate Leadership Council. Prior to joining the Council, Ms. Rorke was director of energy policy and senior fellow at the R Street Institute and also founded the energy program at the American Action Forum. As a legislative assistant to former U.S. Rep. Bob Inglis of South Carolina, Ms. Rorke helped develop the first Republican-sponsored carbon tax bill. She began her career as a presidential management fellow with the National Oceanic and Atmospheric Association.

Matthew Porterfield is the vice president, policy and research at the Climate Leadership Council. Prior to joining the Council, he was the deputy director of the Harrison Institute for Public Law at the Georgetown University Law Center, where he continues to serve as an adjunct professor. He has published a number of influential works that have advanced our understanding of international trade rules and their application to environmental issues, including on WTO-compliant border adjustments and U.S. upstream greenhouse gas taxes. Mr. Porterfield holds an LL.M. from Georgetown University and a J.D. from Vermont Law School.

I. INTRODUCTION

The industrial sector produces more than 25% of global CO2 emissions. No climate solution can be effective without identifying and mobilizing decarbonization pathways for hard-to-abate manufacturing processes, like those required to produce steel, aluminum, cement, fertilizers, and chemicals. Firms are innovating low-carbon solutions, but a singular challenge remains: stiff competition from low-cost suppliers makes it difficult to finance the development and deployment of innovative, lower-carbon processes and technologies. This is especially true in competition between firms operating in market economies and state-owned enterprises.

Recognizing that firms face significant hurdles to achieving decarbonization, the United States and the European Union have launched negotiations for the Global Arrangement for Sustainable Steel and Aluminum (Global Arrangement or GASSA), the first trade agreement of its kind. It will enable the parties to work together toward reducing sources of global non-market excess capacity (NMEC) in steel and aluminum manufacturing and lowering the carbon intensity of traded products.[i]

The approach is revolutionary. It brings together two of the largest, cleanest manufacturers and the most powerful consumer markets in the world to reform trade in energy-intensive goods.[ii] Prior Council research has demonstrated that successful resolution of the Global Arrangement can reduce global industrial emissions, reward carbon-efficient manufacturers and workers, and generate clear benefits for participating economies. Moreover, the Global Arrangement can provide a powerful template for future agreements between additional countries, covering additional commodities and addressing global manufacturing practices across a number of important sectors.

To meaningfully address the 9.15 gigatons of annual industrial CO2 emissions, we need a global marketplace capable of rewarding firms for manufacturing goods with fewer emissions than their competitors. As a carbon-efficient manufacturer of goods, the U.S. is well-positioned to lead the development of policies that leverage trade rules to cut emissions and reduce the power of non-market firms. And as the world's largest economy, the U.S. can bring other countries to the table in partnerships that yield more emissions reductions and more benefits for the cleanest firms.

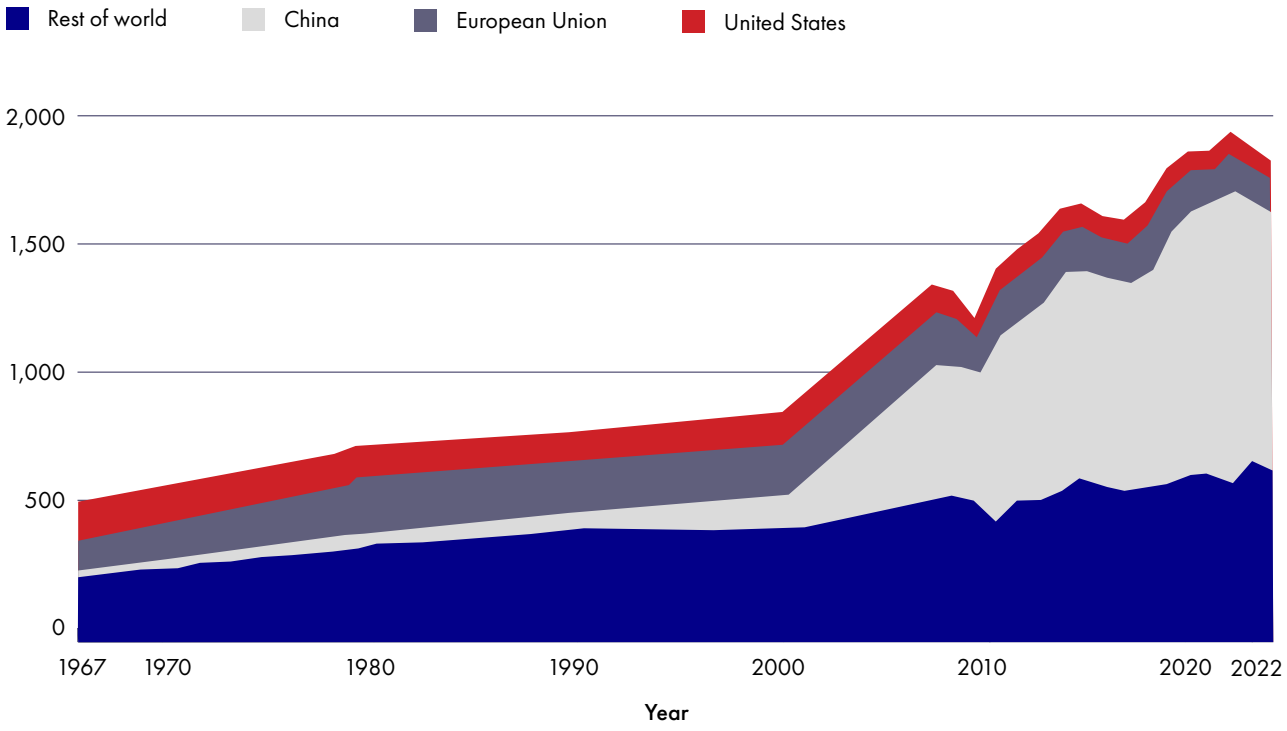
In this context, the Global Arrangement's success is an important bellwether. This deal tests our ability to use novel trade approaches in the climate fight, begins with negotiations between two like-minded and large economies, and is specifically designed to welcome future participation by new countries over time. Progress has been slow-going, but the paradigm shift that success could bring warrants the parties redoubling their efforts to finalize a deal.

This paper builds from previously conducted research to assess the state of steel production and trade and the abundant benefits available to the U.S. and the EU if the negotiation is successful. A well-designed Global Arrangement can reward lower-carbon manufacturers with higher sales and profits, on-shore steel production, secure decarbonization investments, and lower carbon emissions.

II. STEEL PRODUCTION TRENDS

Until the 2000s, global steelmaking was dominated by the European Union and the United States. Chinese production has grown tremendously over the last two decades; China now produces more than half of all global crude steel.[iii] With this shift in global manufacturing come consequences for supply chains, domestic industry, and global emissions.

FIGURE 1. CRUDE STEEL PRODUCTION BY COUNTRY, MILLION TONNES



Source: World Steel Association

The U.S. and EU manufacture steel with lower emissions than China and the global average. This is a result of specific manufacturing processes used in each market. In Figure 2, below, we show data across these markets identifying differences between manufacturing processes and carbon intensities. The data are divided along the following categories:

PRODUCTION ROUTE

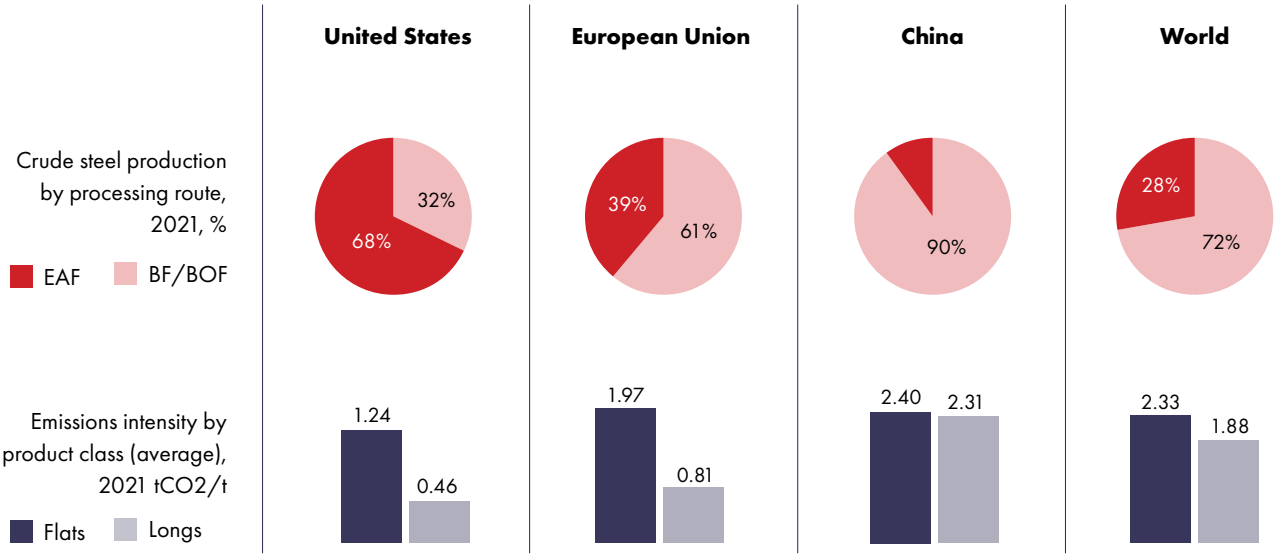
Steel can be manufactured in two primary ways. Primary steel is generally produced in a blast furnace-basic oxygen furnace (BF-BOF). Through this process, iron ore is reduced (oxygen is removed in the presence of carbon, typically from coal) and impurities in the virgin material are burned off. Secondary steel is typically made in an electric arc furnace (EAF) mini mill, in which steel scrap and direct reduced iron are melted at extremely high temperatures. The EAF process is roughly 65% less carbon-intensive than BF-BOF production, depending on the relative carbon-intensity of electricity.

PRODUCT CLASSES

Steel products can be broadly divided into two product classes. Flat products, such as steel sheet and plate, are used across a range of consumer and industrial applications including household appliances, automotive manufacturing, road construction, and pipelines. Long products, like bars, beams, and rods, are used primarily in construction, machining, and other industrial applications.

Generally, flat products are produced by BF-BOF operations. Longs can be produced through either BF-BOF or EAF operations. This distinction is gradually softening, particularly in the U.S. market.

FIGURE 2. MARKET CHARACTERISTICS, U.S., EU, CHINA, AND WORLD AVERAGE



Source: CRU Consulting for the Climate Leadership Council, 2022

The U.S. steel industry developed and leads the world in EAF usage, which accounts for nearly 70% of domestic production. The dominance of EAF facilities in the U.S. market coupled with innovative approaches by U.S. BF-BOF operators to deliver lower-carbon flat products to manufacturers (e.g., automakers) gives the U.S. the lowest production carbon intensity of any major global steel maker. U.S. products are 50-75% more carbon-efficient than the world average.

The EU steel industry has a significantly larger share of BF-BOF—roughly 60% of production. Reflecting relatively lower levels of scrap and EAF utilization, EU producers have carbon intensities above the U.S. but still 15-55% more carbon-efficient than the world average.

Chinese production is dominated by BF-BOF. Just 10% of Chinese production uses the EAF pathway. As a result, Chinese steel tends to be 5-25% more carbon-intensive than the world average.

III. TRADE AND THE GLOBAL ARRANGEMENT FOR SUSTAINABLE STEEL AND ALUMINUM

In 2018, the Trump administration launched new tariffs on steel and aluminum imports under Section 232 of the Trade Expansion Act of 1962. Intended to preserve domestic manufacturing in support of long-term national defense and critical infrastructure needs, the 232 tariffs were imposed at 25% on imports of steel and derivative products and 10% on imports of aluminum and derivative products. Full or partial exemptions to these tariffs were issued to Mexico and Canada under the United States-Mexico-Canada Agreement (USMCA) and to Argentina, Australia, Brazil, and South Korea.[iv] The tariffs initially cut EU-U.S. bilateral steel flows by 25%. The 232 tariffs now cover just over 40% of U.S. iron and steel imports.[v]

In response, the European Union imposed several measures. To support the domestic steel industry, the Steel Safeguard capped imports near historical levels and imposed a 25% tariff on imports above that level. The EU also undertook anti-dumping action against China, reducing their import share from roughly 25% to roughly 5%. Targeting the U.S., the EU imposed tariffs on a variety of products, including grains, jeans, and bourbon.[vi] The EU also launched its Carbon Border Adjustment Mechanism (CBAM). Starting in 2026, the CBAM will begin to charge steel and aluminum imports for their carbon emissions in line with the domestic-facing European Emissions Trading System. This will cover nearly 85% of all iron and steel imports to the EU.[vii]

The relatively antagonistic trade position assumed by the U.S. and EU to one another's imports began to restrict trade and insulate domestic industry but did not address the ascendant role of China's carbon-intensive steel industry. Despite recent efforts to shutter excess capacity, Chinese steel manufacturers are responsible for significant global overcapacity in the steel market. Low global prices set by excess Chinese production make it difficult for steel producers in market economies to finance the investments necessary to improve and increase production and cut greenhouse gas emissions. Moreover, neither the 232 tariffs nor the EU's Steel Safeguard measure leveraged the existing carbon advantage held by U.S. and European producers over international production.[viii]

In October 2021, the U.S. and EU announced their intention to negotiate the new Global Arrangement trade deal to address both NMEC and the carbon intensity of steel and aluminum manufacturing.[ix] As part of the October deal, the United States agreed to a tariff rate quota (TRQ) that would allow historically-based amounts of EU steel and aluminum to be imported without being subject to the 232 tariffs, and the EU agreed to lift the retaliatory tariffs.[x]

While the U.S. and the EU alone are participating in this round of discussions, they have indicated their interest in inviting "like-minded economies to participate in the arrangements." Other major manufacturers, including Japan and the United Kingdom, appear well positioned to join.

Press reports have indicated that negotiators are exploring several different policy designs. These include a tiered tariff structure based on carbon intensity, the CBAM as is being implemented, and specific additional tariffs imposed on production from NMEC sources.[xi] Parties have not yet agreed on a complete design for any element, though they appear to have made significant progress in developing a system to collect product-specific carbon intensity data and establishing tariff rates for NMEC. Disagreements remain over the treatment of trade between the U.S. and the EU, the proportion of imports subject to these instruments, and EU concerns over the World Trade Organization (WTO) viability of some Global Arrangement elements. The parties originally agreed to a two-year timeline to identify the components of their arrangement; that deadline was revised to January 1, 2024.

THE GLOBAL ARRANGEMENT AND THE WTO

One obstacle to progress in the negotiations has been the EU's concerns that imposing tariffs on steel and aluminum from countries that are not participating in the Global Arrangement could constitute impermissible discrimination under the rules of the WTO.[xii] Most of the discussion on carbon import fees has focused on the WTO's environmental exceptions, which permit measures "relating to the conservation of exhaustible natural resources"[xiii] or "necessary to protect human, animal or plant life or health."[xiv] These exceptions, however, have been interpreted restrictively by the WTO's Appellate Body and might not be found to apply to the Global Arrangement. The EU's CBAM could similarly fall outside the scope of the environmental exceptions because it provides more favorable treatment to products from countries that implement explicit carbon pricing.

There are, however, other WTO defenses available that could apply to the Global Arrangement,[xv] including exceptions for measures a country considers necessary to protect essential security interests[xvi] and for intergovernmental commodity agreements (ICAs).[xvii] The U.S. has already invoked the essential security exception in defense of the 232 tariffs on steel and aluminum. An ICA used to implement the Global Arrangement could be structured to accommodate a variety of policy approaches and would provide a strong defense for both the emissions intensity and NMEC provisions.

IV. UNLOCKING KEY BENEFITS

Despite the difficulties in developing the details of and agreeing to the first trade deal of its kind, securing a successful agreement on the Global Arrangement will be extremely important to leverage the U.S. and European carbon advantage over global production; reward lower-carbon manufacturers investing in decarbonization; accomplish domestic policy goals, including securing reliable domestic metals supplies; and accelerate progress toward a net zero future.

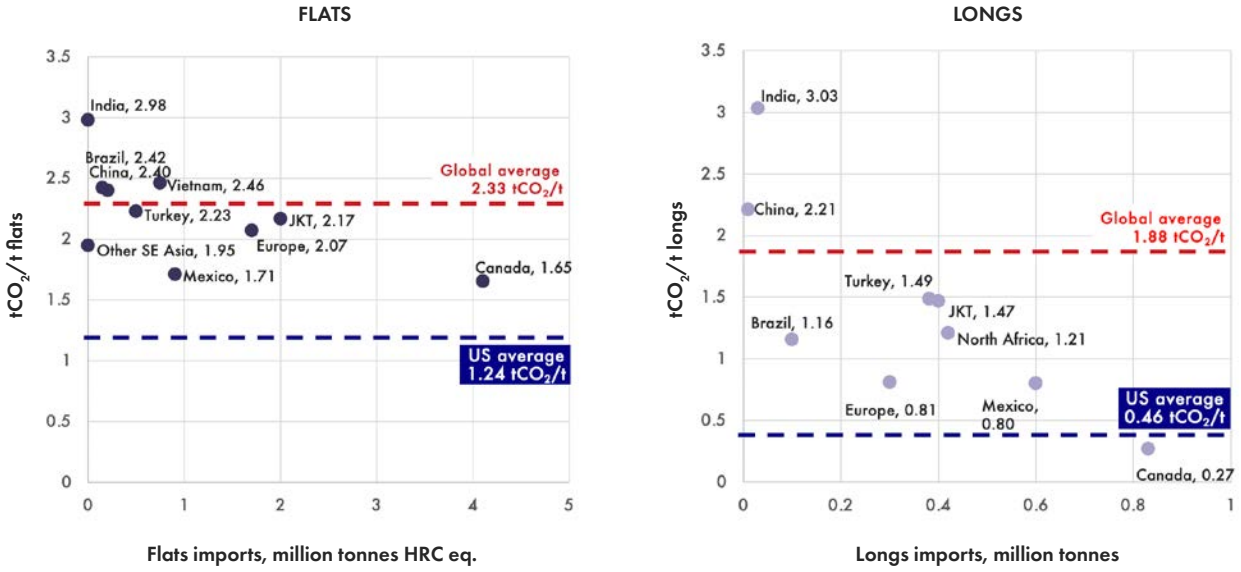
REWARDING LOWER-CARBON MANUFACTURERS

The U.S. and the EU are more carbon-efficient manufacturers of steel than the world average. The carbon advantage enjoyed by innovative U.S. and EU producers can translate into significant commercial benefits—if global producers are held accountable for their emissions intensities.

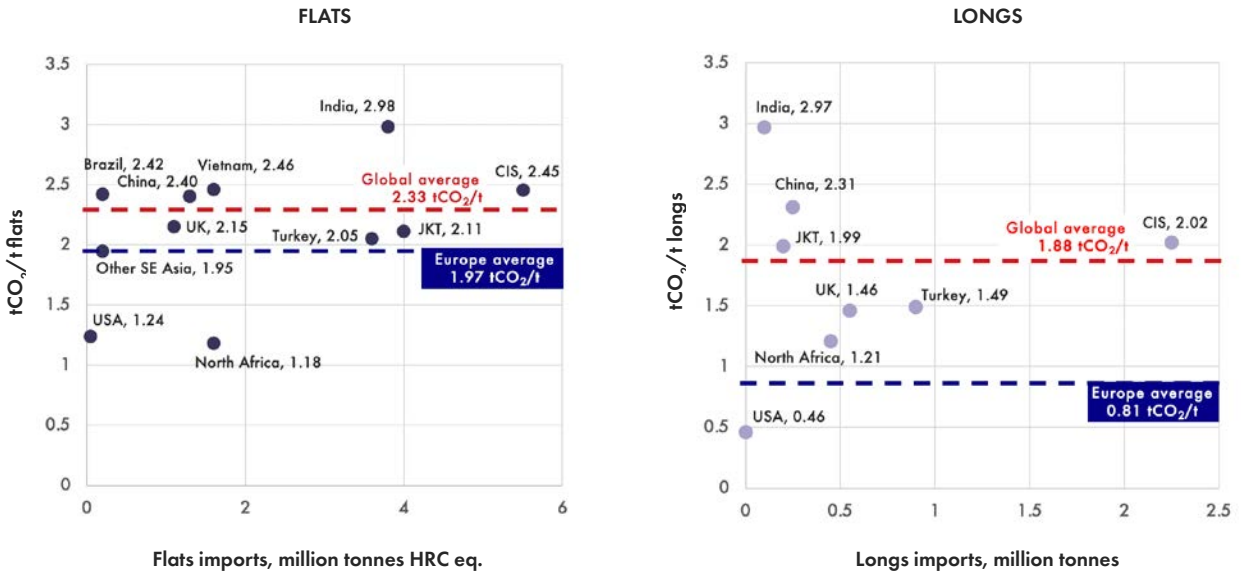
Figure 3 details the relative carbon intensities of production of steel imports to the U.S. and European markets, segmented into flats and longs. Note that for both markets, domestic production tends to be more carbon-efficient than all or most imported products.

FIGURE 3. EMISSIONS INTENSITIES FOR IMPORTED FLATS AND LONGS, 2021

EMISSIONS INTENSITY OF IMPORTS INTO THE US



EMISSIONS INTENSITY OF IMPORTS INTO EUROPE



Source: CRU Consulting for Climate Leadership Council, 2022

An analysis of four different designs for the Global Arrangement, which create a "carbon perimeter" around the U.S. and EU markets, demonstrated significant benefits to domestic firms.[xviii] Specific benefits are described in Table 1.

In the U.S. market, manufacturers benefit from most approaches to the Global Arrangement, increasing sales as much as 6.5%, product value add as much as 64%, and capacity utilization as much as 6%. These are additional benefits beyond those achieved with the existing 232 tariffs. Note that our research identifies that some Global Arrangement designs are not as protective as 232 tariffs.

This suggests that policy design is an important component of maximizing domestic economic and political benefits.

The benefits to the European market are dramatic, given the limited existing protection for EU manufacturers under the Steel Safeguard. The Global Arrangement would unlock increases in sales as much as 22.5%, increase profits as much as 184%—nearly triple existing profits—and reclaim capacity utilization lost to foreign competition as much as 17.5%.

TABLE 1. GASSA SCENARIOS AND BENEFITS TO DOMESTIC MANUFACTURERS

	U.S.		EU	
	Flats	**Longs**	**Flats**	**Longs**
Sales	5.4 to 6.5%	-8.6% to 5.1%	20.2% to 22.5%	5.1%
Mill value add	64%	-19.1% to 13.6%	158.9% to 183.7%	44.6% to 123.8%
Capacity utilization	+5.0 to 6.0%	-8.3% to 4.9%	15.7% to 17.5%	+5.1%
Import share	-30.9% to -25.5%	-26.5% to 44.4%	-61.9% to -55.4%	-38.3%

Source: CRU Consulting for Climate Leadership Council, 2022

ADDRESSING DOMESTIC POLICY PRIORITIES

The U.S. and EU have similar domestic priorities for metals manufacturing. They each want to increase domestic manufacturing to secure supply, get positive returns from large policy reforms and investments, and reduce the impact of dumping and price cutting by foreign suppliers on domestic production.

Alongside their agreement to address NMEC and the carbon intensity of traded product under the Global Arrangement, the U.S. and EU committed to "domestic policies [that] support the objectives of the arrangement and support lowering carbon intensity across all modes of production."[xix] The U.S. is satisfying this commitment with billions of dollars of new investment in industrial decarbonization under the Bipartisan Infrastructure Law and Inflation Reduction Act. The EU has invested billions of euros of new investment in the Green Deal Industrial Plan and is making reforms to the European Emissions Trading System.

TABLE 2. NEW INVESTMENTS IN INDUSTRIAL DECARBONIZATION, USD

	INVESTMENT, 2022-2031
U.S. Inflation Reduction Act	$43.8 billion
EU Clean Tech Manufacturing	$46 billion

Source: Author's calculations. U.S. data from CBO, DSIRE, and EIA; EU data from Bruegel and the EU Competition Policy forum.[xx]

These investments indicate a commitment to supporting domestic production over the long term as both markets aim to substantially reduce greenhouse gas emissions. Continued dumping and price cutting by higher-carbon foreign competitors can erode the benefits of these investments. Companies financing large capital investments to improve their manufacturing facilities will find themselves exposed to lower-cost, higher-carbon, non-market competition.

LOWERING GLOBAL EMISSIONS

In Washington and Brussels, policymakers are actively exploring trade approaches as a vehicle to cut emissions. It is increasingly clear that without significant new policy approaches to encourage accountability and cooperation, we will not reduce emissions at the scale and speed demanded by climate change.

Fortunately, cooperative approaches are emerging and can be effective. For example, the G7 climate club conversation continues to mature. In December 2023, 33 countries, including all G7 countries, announced an informal climate club framed around addressing industrial sector emissions. Preliminary estimates of an alternative approach, in which all G7 countries form a climate club and cut imported emissions in line with domestic carbon intensities can lower global emissions 1.8 gigatons—about 5% of global emissions.[xxi] The Global Arrangement has relatively modest ambition in comparison, cutting the carbon intensities of products imported to just two markets and in just two sectors, steel and aluminum. Still, the Global Arrangement may cut the emissions associated with metals consumption by as much as 14%, a meaningful contribution to industrial decarbonization.

TABLE 3. GLOBAL ARRANGEMENT LOWERS THE CARBON INTENSITY OF STEEL CONSUMPTION IN THE U.S. AND EU

	U.S.		EU	
	Flats	**Longs**	Flats	Longs
Change in emissions intensity, domestic sales (%)	-2.6%	-12.8 to -3.7%	-4.0%	-12.9% to -10.3%

Source: CRU Consulting for Climate Leadership Council, 2022

While the immediate climate benefits may be modest, the precedent is not. The U.S. and EU combine for just less than 6% of global steel manufacturing and about 12% of global steel consumption, but the Global Arrangement is designed to welcome new partners and expand to cover an increasing share of global production. If successfully negotiated and expanded, it will fundamentally change incentives for manufacturing choices and trade flows, ultimately minimizing NMEC and dramatically improving the carbon efficiency of production.

Perhaps more significantly, a successfully negotiated Global Arrangement can be a template to adopt future trade agreements targeting additional carbon-intensive commodities like fuels, fertilizers, and cement. These agreements can further reduce industrial emissions and put significant pressure on global manufacturers to reduce the carbon intensity of their operations. A core group of like-minded, carbon-efficient countries with sufficient market power can deploy a series of trade measures that successfully change international market incentives.

V. CONCLUSION

U.S.-EU Global Arrangement negotiations mark a transformative shift in climate cooperation and accountability. Successful resolution will make existing investments in decarbonization more impactful in the U.S. and European markets and provide a platform to broaden cooperation to new, like-minded partners. It will create attractive economic benefits for lower-carbon manufacturers in participating markets, with higher sales, profits, and capacity utilization. It will also help cut the carbon emissions associated with metals consumption. These considerable benefits under the GASSA can attract new partners and prove the business and political case for more expansive versions of international climate cooperation.

While the benefits are obvious, the path forward is difficult. There is no template for the U.S. and EU to lean on in negotiating the first trade agreement of its kind to reduce the emissions associated with traded commodities and global sources of NMEC. The stakes are high: a successfully negotiated and implemented Global Arrangement is key to cutting global emissions and expediting international climate cooperation in future trade agreements or a climate club. Negotiators should work earnestly to find agreement on this transformative contribution to climate and trade policy.

ENDNOTES

i U.S.-EU Joint Statement, Steel and Aluminum, October 31, 2021, available at: https://ustr.gov/sites/default/files/files/Statements/US-EU%20Joint%20Deal%20Statement.pdf

ii Note that the GASSA covers trade in both steel and aluminum. This analysis is restricted to steel, reflecting the Council's prior research with CRU, U.S. Steel Industry: Leveraging a Carbon Advantage, published May 2021 and Opportunities for US-EU Steel Trade Agreement, published December 2022.

iii World Steel Association, 2023 World Steel in Figures, May 18, 2023. Available at: https://worldsteel.org/steel-topics/statistics/world-steel-in-figures-2023/

iv Rachel F. Fefer, In Focus: Section 232 of the Trade Expansion Act of 1962, Congressional Research Service, April 1, 2022. Available at: https://crsreports.congress.gov/product/pdf/IF/IF10667

v Author's calculations. Trade volumes from "Trade Map," International Trade Centre, https://www.trademap.org/Index.aspx, accessed on November 15, 2023; Covered product categories from "Annex I: Derivatives of Aluminum Articles," U.S. Department of Commerce Bureau of Industry and Security, August 29, 2018, https://www.bis.doc.gov/index.php/documents/section-232-investigations/2521-annex-i-derivatives-of-aluminum-articles/file and "Annex II: Derivatives of Steel Articles," U.S. Department of Commerce Bureau of Industry and Security, August 29, 2018, https://www.bis.doc.gov/index.php/documents/section-232-investigations/2520-annex-ii-derivatives-of-steel-articles/file.

vi European Union, Immediate Notification under Article 12.5 of the Agreement on Safeguards to the Council for Trade in Goods of Proposed Suspension of Concessions and Other Obligations Referred to in Paragraph 2 of Article 8 of the Agreement on Safeguards, G/L/1237; G/SG/N/12/EU/1 (May 18, 2018), available at: https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=246223,246228,245249&CurrentCatalogueIdIndex=2&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True

vii Author's calculations. Trade volumes from "Trade Map," ITC, https://www.trademap.org/Index.aspx, accessed on November 15, 2023; Covered product categories from Vidovic, D., Marmier, A., Zore, L. and Moya, J., "JRC Technical Report: Greenhouse gas emission intensities of the steel, fertilisers, aluminium and cement industries in the EU and its main trading partners," Publications Office of the European Union, September 29, 2023, https://publications.jrc.ec.europa.eu/repository/handle/JRC134682.

viii For an in-depth benchmarking study by country and process, refer to Ali Hasanbeigi, Steel Climate Impact: International Benchmarking of Energy and CO2 Intensities, Global Efficiency Intelligence, April 2022, available at: https://www.globalefficiencyintel.com/steel-climate-impact-international-benchmarking-energy-co2-intensities

ix U.S.-EU Joint Statement, Steel and Aluminum, October 31, 2021, available at: https://ustr.gov/sites/default/files/files/Statements/US-EU%20Joint%20Deal%20Statement.pdf

x Fact Sheet: U.S. – EU Arrangements on Global Steel and Aluminum Excess Capacity and Carbon Intensity (October 21, 2021), https://ustr.gov/about-us/policy-offices/press-office/fact-sheets/2021/october/fact-sheet-us-eu-arrangements-global-steel-and-aluminum-excess-capacity-and-carbon-intensity .

xi See Ana Swanson, "U.S. Proposes Green Steel Club that Would Levy Tariffs on Outliers," The New York Times, December 7, 2022, https://www.nytimes.com/2022/12/07/business/economy/steel-tariffs-climate-change.html; David Lawder, "USTR Tai says any metals tariff deal with EU must address global excess capacity," Reuters, April 28, 2021, https://www.reuters.com/world/us/ustr-tai-says-any-metals-tariff-deal-with-eu-must-address-global-excess-capacity-2021-04-28/.

xii See David Lawder and Philip Blenkinsop, Exclusive: EU, US 'green steel' plan to box out China stalls ahead of October deadline, Reuters (September7, 2023) ("EU sources said its negotiators are concerned that U.S. proposals, which could require it to impose tariffs on steel made outside a "climate club" of countries, will not comply with WTO rules against discrimination"), https://www.reuters.com/markets/commodities/eu-us-green-steel-plan-box-out-china-stalls-ahead-october-deadline-2023-09-07/#:~:text=WASHINGTON%2C%20Sept%207%20(Reuters),of%20the%20Atlantic%2-0told%20Reuters.

xiii General Agreement on Tariffs and Trade (GATT), October 31, 1947 Article XX(g).

xiv GATT, Article XX(b).

xv See Matthew C. Porterfield, Carbon Import Fees and the WTO, Climate Leadership Council (September 2023), https://clcouncil.org/reports/Carbon_Import_Fees_and_the_WTO.pdf .

xvi GATT, Article XXI(b).

xvii GATT, Article XX(h).

xviii The scenarios include two approaches to ad valorem import charges that increase with the carbon intensity of imported product and two approaches to carbon charges based on the tons emitted in the manufacture of imported goods. A more complete description of the scenarios can be found in Opportunities for US-EU Steel Trade Agreement, published December 2022.

xix U.S.-EU Joint Statement, Steel and Aluminum, October 31, 2021, available at: https://ustr.gov/sites/default/files/files/Statements/US-EU%20Joint%20Deal%20Statement.pdf

xx See "Estimated Budgetary Effects of H.R. 5376, the Inflation Reduction Act of 2022," Congressional Budget Office, August 5, 2022, https://www.cbo.gov/system/files/2022-08/hr5376_IR_Act_8-3-22.pdf; "Programs," DSIRE, https://programs.dsireusa.org/system/program, last accessed May 18, 2022; "Summary of Legislation and Regulations Included in the Annual Energy Outlook 2022," U.S. Energy Information Agency, March 2022, https://www.eia.gov/outlooks/aeo/assumptions/pdf/summary.pdf; Kleimann et al., "How Europe should answer the US Inflation Reduction Act," Bruegel, February 23, 2023, https://www.bruegel.org/policy-brief/how-europe-should-answer-us-inflation-reduction-act; and "Competition Policy," European Commission, https://competition-policy.ec.europa.eu/about/news_en, last accessed May 18, 2022.

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