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Convergence and Divergence

Multilateral Trade and Climate Agendas

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Introduction

As the world's largest economies fall short of their Paris Agreement climate commitments, and the level of CO_2 continues to increase, there is growing fear that humanity is running out of time. The global carbon clock, which measures how long before the amount of CO_2 in the atmosphere causes ecological collapse, serves as a forceful call to action. The international community must act swiftly within every existing multilateral framework to combat climate change.

The trading system is a fundamental pillar of the multilateral postwar world. As global temperatures continue to rise and international action to reverse climate change moves slowly, the multilateral trading system is under growing pressure to, at best, enable collective action on climate change and at least, not get in the way. According to the World Trade Organization (WTO), "Freer trade is not an end in itself, it is tied to crucially important human values and welfare goals . . . Among these goals are raising standards of living, optimal use of the world's resources in accordance with the objective of sustainable development, and protection and preservation of the environment." As international leaders and activists consider ways to forestall the looming climate disaster, climate change mitigation must be at the forefront of their trade agendas.

When it comes to combating this global commons problem, countries have largely pursued their own agendas—on their own timelines. A few countries have made considerable progress toward carbon neutrality. Bhutan and Suriname are carbon neutral. Costa Rica, which the United Nations Environment Programme describes as a "template" for a carbon-neutral future, produces more than 98 percent of its electricity from renewable sources. Meanwhile, China, the European Union, and the United States, each far from a blueprint for the future, have pursued climate policies on their own timeframes and with varying degrees of success. The countries are constrained by domestic politics, and yet they have been pulled further into the web of multilateral engagement as the importance of fighting climate change grows. While some countries have succeeded in reaching their climate targets, this fractured approach and haphazard commitments have significantly slowed progress on the world's most pressing problem.

The European Union has made significant headway when it comes to emissions reductions and decarbonization. Between 1990 and 2019, EU emissions dropped 24 percent, and at current rates of change, emissions are slated to drop a total of 36 percent by 2030 compared with emissions in 1990. Nevertheless, the Green Party, Europe's political party focused on climate-driven outcomes, picked up 22 seats in the European Parliament in 2019 and has recently become part of the German government. While EU-wide decarbonization is not sufficient on its own to stave off the effects of climate change, the European Union has been relatively successful in galvanizing other countries to contemplate similar policies via the "Brussels effect." This is likely to continue in global climate policy as Greens continue to grow in popularity.[1]

The United States has been less successful than the European Union when it comes to achieving emissions reductions. Each year, the United States spends approximately $20 billion on fossil fuel subsidies, and oil and gas production subsidies grew 28 percent between 2017 and 2019. One study estimates that these fossil fuel tax breaks will cost the U.S. government upward of $11 billion in lost revenue between 2019 and 2023. However, U.S. emissions dropped by over 10 percent in 2020, in part due to the pandemic, but have continued to decrease overall since their peak in 2007. In 2020, most new energy in the United States came from wind and solar.

Major differences also persist between the European Union and the United States when it comes to public perception of climate change. A 2021 Yale survey found that 65 percent of Americans are worried about global warming. Though only 47 percent of respondents believed climate change would harm them personally, that same study found that 77 percent of Americans support funding research for renewable energy. In the United States overall, emissions have largely plateaued, and the public, led in large part by Millennials and Gen Z, has begun to take a greater interest in climate policy. In the European Union, on the other hand, 93 percent of EU citizens regard climate change as a serious problem, and 81 percent believe that the government should boost financial support for the clean energy transition, even if that means a reduction of fossil fuel subsidies.

In 2019, China emitted more carbon than the rest of the developed world combined, accounting for 27 percent of total emissions that year. China has committed to "peak emissions" by 2030, after which it has pledged to reduce its emissions. Some studies argue, however, that emissions in China have already peaked and that President Xi Jinping's 2030 commitment is purposefully conservative, allowing the government to more easily beat its target. China is home to the world's largest consumer base, with nearly 1.4 billion citizens, meaning government policies that incentivize certain types of behavior can have far-ranging consequences. Although the European, U.S., and Chinese agendas may seem disparate or conflicting at times, they are not entirely divergent. The United States aims to achieve carbon neutrality by 2050; the European Union aims for 2055; and, despite its higher emissions and far larger population, China aims for 2060.

While the specifics of each country's climate goals vary widely, each country has a core objective of achieving carbon neutrality by mid-century. However, policies to achieve these goals are largely domestic and thus incomplete. For example, if China decides to build fewer coal plants and scale up renewable energy, that does not obviate the need to reduce fishery subsidies that contribute to trawling, environmental degradation, and carbon emissions worldwide. Overall, it is insufficient for each country to unilaterally pursue its own climate objectives without also working in concert with international partners to achieve broader decarbonization goals.

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1. Greens were the big winners in 2019 European Parliamentary elections, during which they gained 22 seats in Brussels. In the September 2021 German elections, the largest growth in support for a single political party was for the German Green Party, which accounted for a 5.8 percent uptick in votes, versus 5.2 percent for the Social Democrats.

If the international community wants to make meaningful progress ahead of the 2030 deadline—which critics argue is still too late to avert global catastrophe—major global players should work together to reduce emissions at home and abroad. This paper discusses the politics of climate policy in the United States and how it is influenced by relationships with the European Union and China. It analyzes these international relationships through specific policies, namely subsidies, and assesses their reduction or removal in some cases and their reallocations in others. It also evaluates the politics and policy implications of carbon border adjustments, including their compliance with existing WTO rules. These trade policies allude to domestic industrial policies and how they can be adjusted to better combat climate change while complying with existing trade rules. In outlining policy options for the United States' trade agenda, including how the European Union and China factor into these options, the paper assesses the probability that certain climate policies will ultimately materialize. The paper argues that unilateralism is insufficient and counterproductive in both trade and climate and that only through multilateral, legally compliant policy convergence can countries stave off environmental and economic collapse.

Subsidies and the WTO

Subsidies have long been a complex subject within the WTO, and subsidy rules affect climate actions. How subsidies are treated is important to the climate debate because they permit countries to apply anti-dumping or countervailing duties to protect domestic industry against injuriously cheap imports, which can have the effect of slowing down the deployment of renewables, as the Biden administration's recent decision on solar panels illustrates. Many of the most famous WTO legal cases involve subsidy disputes, such as the ongoing Boeing-Airbus dispute, the Canada-Grain dispute, the Export Subsidies on Sugar dispute, and a variety of U.S. complaints on Chinese subsidies, including a broader debate about whether China's economy is market-driven. As pressure from climate change puts pressure on governments to rethink subsidies at a domestic level, subsidies are increasingly attracting both positive and negative attention from countries and climate activists at the WTO, as countries consider adopting their own "green" subsidies as well as combating subsidies on fossil fuels.

The key multilateral agreement governing industrial subsidies is the WTO Agreement on Subsidies and Countervailing Measures (SCM Agreement). It defines a subsidy as a financial contribution by a government or a public body that confers a benefit. Unsurprisingly, there have been persistent disagreements over defining key elements of subsidies, such as what constitutes a financial contribution or benefit and what is a public body. A tangible example of how difficult it can be to define a subsidy is whether a corporate tax break or preferential tax treatments constitute a subsidy. This question has occupied much of the debate in the Boeing-Airbus dispute, and WTO jurisprudence has not conclusively determined what kinds of tax breaks fall within the scope of the SCM Agreement.

The SCM Agreement divides subsidies into two groups: prohibited and actionable subsidies. The WTO defines actionable subsidies as those that result in injury to a domestic industry, cause serious prejudice, such as export displacement, or those that result in a nullification or impairment of benefits under the General Agreement on Trade and Tariffs (GATT) 1994. To be actionable, a subsidy must be shown to cause injury to another member state. Prohibited subsidies, on the other hand, are comparatively narrower in scope and are limited to export subsidies and import substitution subsidies, which are contingent upon the use of domestic over foreign goods. Both types of subsidies are generally characterized as causing "adverse effects to the interests of another Member." In cases of injury, the SCM Agreement establishes the right of member states to impose trade remedies if they determine that their domestic industry has suffered material injury as a result of another member's subsidy.

To be actionable, a subsidy must be provided by a "public body," which has led to extensive debate over what constitutes a public body, including in the case of state-owned enterprises (SOEs). Financial actions or incentives provided by private bodies are not identified as subsidies and do not fall within the scope of the SCM Agreement. Determining what constitutes a public body has led to significant debate at the WTO, as illustrated in antidumping and countervailing duty cases between the United States and China.

The WTO Dispute Settlement Body definition leaves plenty of room for interpretation, and three legal approaches have emerged to define a public body: the governmental control approach, the governmental function approach, and the governmental authority approach. According to the U.S. Department of Commerce, public bodies are entities in which the government is a majority shareholder. This reflects the "government control" approach to defining public bodies. Under this approach, Chinese SOEs would fall under the scope of the SCM Agreement. China's "governmental function" approach, on the other hand, characterizes a public body as an entity that exercises delegated powers to perform functions akin to those of a government.

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In 2008, China launched a dispute against the United States after the Department of Commerce determined in four investigations that SOEs were providing goods below market value, simultaneously claiming that China was a nonmarket economy. This dispute, *United States – Definitive Anti-Dumping and Countervailing Duties on Certain Products from China* (DS379, 2011), became a landmark case. The case defined a public body as "any entity controlled by a government" or an entity that "possesses, exercises or is vested with governmental authority." As a result, government shareholding alone does not sufficiently fulfill the evidentiary burden of establishing whether or not an entity is a public body. This determination ultimately complicated the U.S. bid to claim that many Chinese subsidies were either actionable or prohibited since it could not clearly prove that the subsidies were provided by a public body. This ambiguity in determining what constitutes a public body provides governments with significant leeway when pursuing industrial climate policies.

The legislative text for the Biden administration's domestic agenda, the Build Back Better Act, includes provisions that prioritize U.S. products. For example, the domestic content bonus credit applies to products manufactured in the United States: "a manufactured product shall be deemed to have been manufactured in the United States if not less than 55 percent of the total cost of the components of such product is attributable to components which are mined, produced, or manufactured in the United States." The bill does stipulate, however, that this provision "shall be applied in a manner which is consistent with the obligations of the United States under international agreements," although these requirements are certain to invite litigation. While broad renewable energy subsidies would likely comply with WTO rules, given that no local content requirement cases have so far passed muster, it is probable that at least some of the Biden administration's climate agenda directly conflicts with existing WTO rules.

Fossil Fuel Subsidies

Fossil fuels—coal, oil, and natural gas—remain the primary energy sources worldwide, despite their contributions to climate change and the decreasing price of renewables. Fossil fuels account for 84 percent

of global energy consumption, and the energy sector itself accounts for over 70 percent of global greenhouse gas (GHG) emissions. Fossil fuel subsidies therefore significantly constrain global efforts to combat change by distorting markets and maintaining artificially low prices of fossil fuels, which in turn encourages continued consumption and investment in the industry. Part of what complicates international momentum to reduce fossil fuel subsidies is that there is no single definition of what constitutes such a subsidy; the International Monetary Fund (IMF), International Energy Agency (IEA), and the Organisation for Economic Cooperation and Develoment (OECD) each define subsidies and quantify their effects differently.

Fossil fuel subsidies are either consumption or production subsidies. Phasing out consumption subsidies is unpopular politically but necessary for the transition to a decarbonized future. Production subsidies, on the other hand, support producers of fossil fuels. Production subsidies occur in major oil-producing countries, such as Saudi Arabia, Venezuela, and Iran, which leads to systemic deadweight loss. Subsidies are also a public expenditure, redirecting tax dollars away from climate change mitigation and other priorities.

Despite the growing urgency to avert disaster, countries continue to subsidize fossil fuels. G20 countries, which adhere to the OECD definitions of fossil fuel subsidies, consume about 75 percent of the global total energy supply and lean heavily on fossil fuel subsidies to keep energy costs artificially low. In 2009, G20 members agreed to phase out fossil fuel subsidies, but despite a July 2021 joint communiqué on tackling global emissions, G20 countries continue to provide environmentally harmful subsidies. Each year, G20 governments provide $584 billion in subsidies to fossil fuels, with 47 percent directed toward oil. Governments tend to implement these subsidies via policy mechanisms such as direct budgetary transfers and tax expenditures, public financing of fossil fuel projects, and SOE investment that supports the production and consumption of fossil fuels. China, the European Union, and the United States have all committed to addressing fossil fuel subsidies at the domestic level. However, concrete action has been slow, and other countries have been reluctant to confront them in multilateral settings.

One of the major challenges in applying the SCM Agreement to fossil fuel subsidies is that public finance and SOE investment in fossil fuels have certain elements that are considered subsidies and other elements that are not. Challenges in addressing SOEs within the context of the WTO particularly apply to China. The International Institute for Sustainable Development identifies China as the largest contributor of fossil fuel subsidies, and the majority of those subsidies originate from SOE investment. SOEs are also common in the power sector in multiple countries in the European Union as well as in India, South Africa, South Korea, and Russia. Existing WTO panel and Appellate Body decisions have defined subsidies narrowly, limiting the ability of other WTO members to impose countervailing duties and other trade remedies on subsidies provided through SOEs. These challenges exist for all types of subsidies, not just fossil fuels, and have been one of the more serious problems for the WTO. In order to promote greater clarity within environmental subsidies, some scholars have suggested adopting a similar approach to environmental subsidies as exists in agriculture trade—that is, to apply the green, amber, and red box taxonomy to more clearly delineate among subsidies that are actionable or prohibited.

UNITED STATES

Each year, the U.S. government spends roughly $20.5 billion in fossil fuel subsidies, $14.7 billion of which comes from federal funding and another $5.8 billion of which originates at the state level.[2] Of this funding, roughly 80 percent goes to oil and gas, and the remaining 20 percent is allocated to the coal industry. In the U.S. FY 2022 budget, the Biden administration seeks to eliminate fossil fuel subsidies through the

2. This number contrasts starkly with IMF estimates, which considers social externalities. The IMF calculates the amount of U.S. fossil fuel subsidies at $778.8 billion in 2017, decreasing to $662 billion in 2020.

removal of fossil fuel tax preferences and by reforming foreign fuel income taxation. The administration estimates that eliminating these subsidies would raise $35 billion over 10 years, which would put annual subsidies closer to $3.5 billion per year.

President Biden issued an executive order in January 2021 that directed federal agencies to ensure that federal funding is not directly subsidizing fossil fuels. However, removing subsidies in the form of tax breaks requires congressional action, which is highly unlikely. Some Democrats, including environmentalist progressives such as Senators Ed Markey and Bernie Sanders, have introduced the End Polluter Welfare Act of 2021, which aims to close tax loopholes and eliminate subsidies for the oil and gas industries. In August 2021, a group of 54 Democrats wrote a letter urging that a measure to repeal fossil fuel subsidies be included in the Build Back Better Act. However, it is highly unlikely that many Democrats would support this legislation, let alone Republicans. Senator Joe Manchin (D-WV), a key Senate Democrat from coal country, has repeatedly expressed an unwillingness to phase out fossil fuel subsidies, particularly coal subsidies, meaning Democrats do not have enough votes to prevail.

Further complicating efforts to enact subsidy reform, recent research has indicated insufficient transparency at the state and local levels regarding subsidies. For instance, Colorado, a major natural gas producer, grants tax offsets for property taxes paid by oil and gas producers. Due to the opaqueness of subsidies and the complexity of the U.S. tax code, policies such as these can make it difficult for foreign countries to challenge such measures within the WTO.

EUROPEAN UNION

Despite its reputation as a leader in climate policy, the European Union spends roughly €50 billion ($55 billion) each year on fossil fuel subsidies. Although the European Union continues to work toward a single integrated market with a unified climate policy, EU member states have divergent policies on subsidies, despite EU rules prohibiting most forms of state aid. Between 2015 and 2018, fossil fuel subsidies in the European Union grew by 6 percent, although fossil fuel subsidies decreased in Austria, Denmark, Estonia, and Hungary during that time. Some member states, such as Germany and France, have developed plans to phase out fossil fuel subsidies, while other member states, such as Croatia, Estonia, and Malta, have stated that they do not plan to phase out certain fossil fuel subsidies, citing the need to protect certain sectors. However, as consumers remain dependent on fossil fuels for electricity due to the lagging deployment of renewable energy, reducing or removing price support from fossil fuels remains politically unpopular.

A number of European states, such as Poland, funnel fossil fuel subsidies through SOEs. The European Commission has called on member states to improve reporting on fossil fuel subsidies, which represents a small but positive step toward increased subsidy accountability and discipline. In Brussels, the European Commission is working to reform EU tax rules to address certain fossil fuel exemption schemes. The European Parliament's EU Environment Action Plan to 2030 calls for phasing out all direct and indirect fossil fuel subsidies by 2025 and phasing out all other environmentally harmful subsidies by 2027, making it by far the most ambitious environmental subsidy policy among global leaders. The European Union is taking these commitments to the multilateral level and agreed to cosponsor a WTO initiative on fossil fuel subsidy reform.

CHINA

China has a complex relationship with fossil fuels. China spent an average of $134 billion on fossil fuel subsidies annually between 2017–2019, outpacing the United States. Eliminating domestic fossil fuel subsidies could be challenging for China, particularly as it struggles with ensuring energy security to meet

the demands of growing population and industries, as demonstrated by the current Chinese energy crisis. In 2020, China was the world's sixth-largest oil producer and fourth-largest producer of natural gas. While it does not have extensive oil and gas reserves, oil production is stable, gas production is growing, and it continues to have easily recoverable coal resources. From a security perspective, it is usually a priority for governments to ensure domestic sources of energy, but China's reliance on coal has led to high levels of air pollution, which has been very unpopular domestically.

At the 2021 UN General Assembly, President Xi announced that China would no longer finance coal plants abroad. While the announcement lacked concrete details—such as whether private entities would continue to finance coal abroad—it is an indication that China is making an effort to join multilateral climate commitments. China is also a G20 member and has made a voluntary commitment to reduce fossil fuel subsidies. China has invested heavily in renewables and is currently the world's largest producer of hydroelectric and renewable power. However, energy from renewables continues to lag in China and is not close to being able to meet domestic demand. In other words, China, like most countries, is undertaking a concerted effort to make its energy more renewable, but it struggles to deploy renewables on a scale that would be capable of meeting demands of a growing population and businesses that rely heavily on domestic fossil fuel energy.

SUBSIDIES OVERVIEW

Of the United States, China, and the European Union, only the European Union has expressed a desire to address fossil fuel subsidies within the multilateral trading system. Addressing fossil fuel subsidies within the framework of the WTO is challenging for a variety of reasons. There have not been any WTO disputes challenging fossil fuel subsidies, most likely due to lack of transparency, poor reporting, and widespread use of subsidies, which makes it difficult to measure the trade impact of subsidies. Furthermore, subsidies at the WTO are evaluated in terms of their trade impact and not their environmental impact. In other words, if a member state cannot prove that a foreign subsidy is causing material injury to its domestic industry, then trade remedies against the subsidizing member cannot be imposed, regardless of whether that subsidy is causing injury to the climate.

This makes challenging fossil fuel subsidies particularly difficult. In order to be actionable, a subsidy must be specific, and fossil fuel subsidies may not meet that standard in every case. Production subsidies would usually qualify, but others, including consumption subsidies that apply to the entire population, may not, although they encourage greater use of fossil fuels by keeping the price low. Furthermore, governments that might be motivated to bring a complaint are often constrained by poor reporting by subsidizing members. While it would be the job of governments to determine the environmental impacts of their subsidies at the domestic level, increasing reporting requirements on these domestic findings within the WTO would be a step in the right direction.

The WTO and Fossil Fuel and Environmental Subsidies

Progress in the WTO on addressing fossil fuel subsidy reform is an uphill battle. The variety of fossil fuel subsidies, ranging from direct payments to tax benefits, aligns with the WTO's relatively broad definition of a subsidy but simultaneously underscores problems arising from the WTO's narrow interpretation of a public body. So far, no fossil fuel subsidies have been **challenged** at the WTO. However, it is not impossible, according to a an IISD **report** by WTO subsidies experts Harro van Asselt and Tom Moerenhout. They write, "it may be possible to argue that some fossil fuel subsidies

amount to a prohibited export subsidy, whereas, for others, it may be possible to demonstrate that they are actionable. However, particularly for the latter, the evidentiary burden will be high."

One potential area for reform relates to subsidy reporting requirements. WTO members are required to **submit** subsidy notifications, but many do not. At an April 2021 meeting, the chair of the WTO SCM Agreement group **noted** that 67 members had yet to submit 2017 subsidy notifications. Improved transparency and better disclosure requirements would help ensure that stakeholders have an accurate understanding of the scope of fossil fuel subsidies. Addressing other challenges, such as the relationship between SOEs and subsidies, as well as special and differential treatment for developing countries, would also benefit discussions on fossil fuel subsidies. However, WTO rule changes can only happen via **consensus**, and it remains highly unlikely that all WTO members would make concessions that would require significant domestic and foreign policy changes.

While the WTO's competency is trade, there is a **growing understanding** that trade policy and environmental policies are inextricably linked, as stated in the **preamble** of the agreement that established the WTO. Furthermore, GATT **Article XX** implicitly recognizes environmental issues as a reasonable justification for certain trade distorting policies, and there have been disputes, such as the **dolphin-tuna** case, that centered on environmental questions. In other words, environmental issues are fair game within the WTO, and an increased focus on trade and climate potentially opens new avenues for climate cooperation among member states.

Agricultural Subsidies

Agriculture, forestry, and land use directly account for 18 percent of GHG emissions, meaning international action on reducing these emissions would have a major impact, comparable to the United States achieving carbon neutrality. The global agriculture sector receives around $600 billion per year in subsidies. Most agriculture subsidies are forms of market price support that artificially increase domestic prices by providing direct subsidies to farmers and by restricting imports. While subsidies that limit rather than increase production may seem climate-mitigating, these subsidies often do not lead landowners to convert their land to rehabilitated ecosystems that would capture carbon and may in some cases lead farmers to produce different commodities that are more environmentally harmful. Most GHG emissions from agriculture are concentrated in beef, dairy, and rice, although there is mounting evidence suggesting that monoculture—cultivating only one crop at a time, which is common in commodities such as corn and soybeans—is harming major carbon sinks, such as Midwestern topsoil. Addressing emissions connected to agriculture is particularly challenging since abrupt changes risk creating food shortages or displacing people whose livelihoods depend on agriculture, but at the same time, there is a growing sense within the WTO that failure to address agricultural subsidies would result in reduced credibility for the organization.

UNITED STATES

The U.S. agriculture sector has long been a beneficiary of subsidies. In 2019, farmers in the United States received $24.5 billion in subsidies and are expected to have received approximately $25 billion in 2021. In 2019, approximately two-thirds of subsidies are directed toward specific commodities, largely when market prices fall below a certain level. The most heavily subsidized commodities are corn, soybeans, wheat, and livestock. In the United States, it is not uncommon for large farms to receive hundreds of thousands of dollars explicitly not to produce certain commodities, such as corn, in order to keep commodity prices artificially high. About 25 percent of subsidies are facilitated through crop insurance

subsidies, including favorable loan schemes that insulate farmers from price and climate shocks. Smaller percentages are allocated to disaster relief programs and conservation programs.

Under the Trump administration, farm subsidies increased to a historic high of $46.5 billion, largely due to payments made directly to farmers who lost export revenue from trade wars. In 2020, government farm subsidies accounted for over 39 percent of U.S. farm income. This substantial increase in government support for the U.S. agriculture sector comes at a time when environmentalists are advocating not to eliminate subsidies but to redirect them toward climate resiliency programs. The World Resource Institute has called on the government to condition certain agricultural subsidies on good environmental practices and the diversification of farm commodities. In line with this agenda, the Biden administration is proposing increased funding for the Conservation Reserve Program, which pays farmers not to farm their land and instead focus efforts on carbon sequestration in soil.

EUROPEAN UNION

Far surpassing U.S. agricultural subsidies, the European Union provided around $64 billion in farm support in 2019. The European Union's 2021–2027 budget allocates €386.6 billion for its common agricultural policy, which constitutes a third of the European Union's budget despite the fact that farming accounts for roughly 1 percent of EU GDP. The European Union recently agreed to reforms that would require payments to farmers to support certain eco-schemes, such as restoring wetlands, though the plan still awaits final approval in Brussels. In the European Union, over 50 percent of agricultural emissions come from livestock. These emissions have not decreased since 2010, and the new policy does not include provisions that limit or reduce livestock subsidies. European farmers are a potent lobbying force and have been a major barrier to environmental policy reform. In the European Union, where addressing agricultural emissions is particularly difficult, environmental policies have focused on increasing carbon sinks to offset emissions, as underscored in the EU forest strategy, which aims to plant three billion trees by 2030.

CHINA

China is the world's largest producer of agricultural products and the world's largest subsidizer of agriculture. In 2020, the OECD estimates that China spent nearly $205 billion on agricultural subsidies. Today, 38 percent of wheat farmers' revenue in China comes from subsidies, versus 8 percent in the United States. In 2019, the WTO ruled against Chinese agricultural subsidies, and subsidies have been gradually decreasing since then. However, the Chinese government planned in 2021 to provide one-time subsidies to support farmers amid rising fertilizer and diesel fuel costs. Nevertheless, that China undertook significant reforms following a WTO ruling on subsidies is potentially promising in that it illustrates at least some willingness by the Chinese to conform to international market standards. China remains the largest destination for U.S. agricultural exports, which hit an all-time high of $35.9 billion in 2021 following implementation of the Phase One trade deal negotiated under the Trump administration, despite China falling short of its commitments. Chinese wheat and rice subsidies, as well as trade controls on corn, wheat, and rice, became subjects of WTO disputes, with the United States claiming that Chinese subsidies for domestic wheat and rice were $100 billion larger than limits permitted in the Chinese accession process. In 2019, the WTO panel ruled in favor of the United States, although litigation is ongoing at the WTO. Overall, there is a strong appetite for agricultural subsidy reform at the multilateral level but almost no political will to enact those changes domestically.

The WTO and Agricultural Subsidies

Within the WTO, there are stark differences in the treatment of fossil fuel and agricultural subsidies. Unlike fossil fuel subsidies, agricultural subsidies have been the **target** of numerous WTO disputes, and member states have long debated how to reform agricultural trade. The **WTO Agreement on Agriculture** prohibits export subsidies on agricultural products unless the subsidies are specified in members' lists of commitments. Members agree to keep **trade-distorting subsidies**, known as "amber box" subsidies, below an established threshold, and members do not need to account for subsidies that fall below an agreed upon share of a member's value of production, known as the ***de minimis* level**. There are also significant exceptions for developing countries, especially least developed countries, which rely on supplies of cheap, subsidized foods.

Unlike fossil fuels, there is a specific working group **directed** toward agricultural trade, though negotiation topics are focused primarily on ensuring food security and reducing trade barriers rather than addressing climate change connected to agriculture. As with fossil fuel subsidies, WTO subsidy reform on reporting would be beneficial. China, the United States, and the European Union are all involved in subsidy and agricultural negotiations, but they have not specifically tethered those negotiations to climate change or their own domestic actions.

Addressing the climate effects of agricultural subsidies offers several spillover benefits. More open global agricultural markets would **facilitate** green technology transfer among countries that can make agriculture more efficient and reduce environmental damage. A non-distorted agricultural sector would also **redistribute** production in line with comparative advantages and encourage resilience in response to climate change.

Fishery Subsidies

Governments spend approximately $35 billion in annual fisheries subsidies, which encourages overfishing and reduces oceans' capacities to absorb carbon. Approximately one-third of fish stocks are overfished, threatening coastal communities that rely on fishing for food and income. Similar to agriculture, climate change connected to fishing is cyclical. As the climate changes and the ocean warms, ocean ecosystems are disrupted, and fishers spend more time at sea, engaged in more destructive fishing practices since fish are increasingly difficult to catch. Oceans are also important carbon sinks. Bottom trawling, a highly destructive fishing practice that destroys 1.9 million acres of seabed each year, releases stored carbon. That release alone amounts to 47.7 million tons of carbon each year, roughly equivalent to annual global air travel. The majority of fishing subsidies are capacity-enhancing subsidies, meaning that they support fleets through means such as fuel subsidies.

China, the European Union, and the United States all engage in heavy subsidization of their fishing industries. China is the world's largest fishing economy, responsible for more than 35 percent of global catch. China is also the world's largest subsidizer of fisheries and provides roughly $7 billion in fishing subsidies each year. China has committed to capping the number of distant-water fishing vessels, which largely operate outside of established legal frameworks, but has not released data its progress. The European Union provides around $3.8 billion in fishery subsidies annually and implemented its Common Fisheries Policies in 2013, which was intended to meet sustainable exploitation rates for all fish stocks by 2020. That goal has still not been met, and the European Maritime Fisheries and Aquaculture Fund will provide $7

billion to the fishing sector from 2021 to 2027. The United States provides approximately $3 billion annually in fisheries subsidies for increasing capacity and promoting sustainable management of fisheries.

China, the European Union, and the United States each have unique demands regarding fishery subsidies and WTO rules. A key tension in negotiations is special treatment for developing countries, where indigenous and coastal communities often rely on fishing for sustenance and income alike. That debate is complicated because China has not been shy about exploiting its developing country status. While there is sympathy for allowing countries to establish carve-outs, particularly for sustenance fishers, China has argued for special treatment as a developing country, despite its position as the world's largest fisher, exporter, and subsidizer of fishing. The European Union, on the other hand, has attracted criticism for seeking exceptions for subsidies for fuel and fish price supports as long as it maintains sustainability programs to replenish fish stocks, even though the effectiveness of such programs is debatable. Overall, progress on fisheries has been stymied by tensions over how to define "overfishing" and whether a ban on subsidies should apply to individual vessels or fleet operators. To date, China, the European Union, and the United States have each exploited ambiguity in the WTO system to their advantage.

Fisheries have been one of the major areas of subsidy negotiations, which have been ongoing for 20 years. However, WTO director-general Ngozi Okonjo-Iwaela is pushing for an agreement in conjunction with the WTO's now-postponed 12th Ministerial Conference (MC12), although progress is uncertain as of this writing. Talks have focused largely on eliminating subsidies that contribute to illegal, unreported, and unregulated fishing, as well as reigning in specific member states' policies, including subsidies, that encourage legal overfishing. The WTO has struggled to prove its relevance when it comes to using trade as a tool to fight climate change. Subsidy discussions are often narrowly focused on trade barriers and market access and often fail to recognize that fossil fuel, agriculture, and fishing subsidies contribute significantly to climate change. For the world to make meaningful progress on climate mitigation, the multilateral system must demonstrate its willingness to combat harmful subsidies.

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Environmental Incentives and Subsidies

UNITED STATES: GREEN SUBSIDIES AND LOCAL CONTENT REQUIREMENTS

As discussed in a previous paper, the Biden administration has pursued a "whole of government" approach to combating climate change, directing federal agencies to use all available tools to enact immediate reforms. Where the European Union has built a climate policy that combines regulation with incentives, the Biden administration is instead pursuing a climate agenda based primarily on incentives. Several climate groups believe this approach will not lead to sufficient change.

Potentially complicating implementation of Biden's climate agenda is the administration's simultaneous pursuit of Buy America policies. The WTO's interpretation of SOEs can be characterized as narrow, while its definition of subsidies is rather broad. Narrower still is the WTO's handling of local content requirements (LCRs). While legitimate objectives, such as protecting the environment and encouraging the deployment of renewable energy, can comply with WTO rules under GATT Article XX exceptions, WTO jurisprudence

has not treated LCRs, even those relating to the deployment of renewables, as consistent with WTO rules. A wide range of green subsidies can be compliant with WTO law, but because LCRs are inherently discriminatory against imported goods, content requirements directly contravene WTO rules. As legal scholars Douglas Nelson and Laura Puccio note in a recent paper, all green energy cases relating to LCRs have been found to violate WTO law. That all LCRs, even those related to climate change mitigation, have been found to violate WTO rules could potentially complicate countries' bids for green industrial policies if climate agendas stipulate LCRs.

Certain renewable energy sectors, such as the U.S. solar industry, are heavily dependent on cheap imports from China. While the majority of U.S. solar jobs exist in sales, installation, and maintenance, select manufacturing firms within the domestic solar industry have repeatedly sought trade remedy protection in order to offset dumping and subsidies and scale up domestic manufacturing of solar panels, even though such trade remedies have played a contributing role in U.S. solar panels costing 50 percent more than the global average. In other words, along with Congress, the Biden administration continues to grapple with trade-offs between purchasing U.S.-made clean energy equipment and hastening the transition to renewables.

By economic sector, transportation is the largest GHG-emitting sector in the United States, meaning the automobile industry is both a potential winner and loser when it comes to building a more renewable future since it could face far more rigorous environmental standards. On the other hand, the automobile industry will be the recipient of substantial government assistance in order to help the industry transition to a more renewable future. Biden's January 2021 executive order on climate also contains a plan to spend $6 billion to transition the entire U.S. government fleet of nearly 650,000 vehicles to electric vehicles (EVs), although that funding is likely insufficient.

The Biden administration's climate agenda will continue to be constrained by what can be achieved in Congress, and so far there is room—albeit limited—for optimism. In late June, Democrats and Republicans agreed to a two-track approach that puts infrastructure into one bill and more comprehensive legislation, including core climate proposals, into separate legislation. In November 2021, Congress passed the $1.2 trillion Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law (BIL). This package includes $550 billion of new funds to improve U.S. infrastructure. Although the infrastructure package omits most of the administration's Build Back Better climate provisions, it does contain a number of provisions that both directly and indirectly advance broader climate goals. The bill provides $65 billion in funding to upgrade the electric grid, $7.5 billion for the development of EV charging networks across the country, and $5 billion in electric and low-emission bus fleets.

> *The Biden administration's climate agenda will continue to be constrained by what can be achieved in Congress, and so far there is room—albeit limited—for optimism.*

The BIL includes $6 billion in funding for companies making batteries or processing component parts of batteries, including $3 billion intended to enhance U.S. manufacturing and recycling of batteries. In a bid to build more resilient North American battery supply chains, $150 million in funding is allocated toward critical minerals and recycling. Part of this funding also establishes a Battery Material Processing Grant Program within the Department of Energy, which will further support domestic supply chain resiliency.

After the infrastructure package was passed, Democrats in Congress have attempted to reach a deal regarding their broader Build Back Better agenda. The initial proposal consisted of $3.5 trillion in funding but was reduced significantly to $1.85 trillion during negotiations. As proposed, the Build Back Better Act contains a number of provisions that could exacerbate trade tensions with foreign partners. In September, congressional Democrats proposed a tax credit of up to $12,500 on zero-emission vehicles, although the increment over the current $7,500 tax credit would be limited to vehicles made in the United States by union workers. As written, qualifying EVs would receive $500 in tax credits that satisfy domestic content requirements, meaning EVs with batteries produced in the United States. Not only do companies such as Tesla and Toyota **oppose** the provision since their workers are not unionized, but stipulating this local content requirement may conflict with WTO obligations. Such provisions underscore the tension between creating jobs, deploying renewables, and accelerating emissions reductions.

The bill passed in the House also includes domestic production incentives for electricity. One component is a bonus tax credit for electricity produced with certain renewable resources, such as solar, geothermal, and wind. Producers would qualify for a bonus tax credit of 2 percentage points, which increases to 10 percentage points if it also meets prevailing wage and labor stipulations. Another tax incentive applies to energy properties. Examples are those that produce solar, geothermal, and wind energy facilities, fuel cell property, energy storage technology, microgrid controllers, linear generators, and biogas properties. These properties would be eligible for a bonus credit if they satisfy domestic content requirements.

Though the package was significantly pared back, in late December 2021 Senator Manchin (D-WV) indicated he was unable to support the reconciliation package, dealing a potentially fatal blow to the Biden administration's agenda. Despite slowing down his own party's efforts to pass this comprehensive legislation, Senator Manchin in early 2022 **indicated** that reaching a compromise on the climate components of the legislation would be relatively easy, particularly compared with some of the social safety net provisions.

While Democrats contemplate next steps on the reconciliation package, they have added climate provisions to other bills, including the **America COMPETES Act**, the House version of the Senate's **United States Innovation and Competition Act**. The COMPETES Act, for example, includes research and development (R&D) funding for the Department of Energy's Office of Science to enable growth and innovation for a more renewable future by supporting research on energy storage, solar, hydrogen, fusion energy, carbon removal, and other areas. The bill would also provide $3 billion to support the domestic solar industry. The bill also contains language on climate diplomacy. It charges the U.S. Department of State with ensuring that each U.S. mission abroad has a climate diplomacy strategy and allocates specific funding to the Green Climate Fund. Other provisions of the bill seek to combat imports from nonmarket economies by strengthening U.S. trade remedy laws and lowering the de minimis level, prohibiting goods from nonmarket economies and countries on the U.S. Trade Representative's Priority Watch List.

Outside of Congress and in line with Biden's "whole of government" approach, agencies have taken it upon themselves to redirect existing funds. For example, the Department of Energy has already **announced** it will invest an additional $100 million into the existing Advanced Research Projects Agency-Energy (ARPA-E) to support the transition to low-carbon technologies.

As the United States heads into midterm elections that could see a shift of power in Washington, Democrats will need to decide whether to parse climate provisions into smaller bills and attempt to pass them individually or to continue with their strategy of lumping large and diverse policies into large legislative packages. The inclusion of domestic production incentives, such as local content requirements,

also underscores prevailing political tensions in the United States and the administration's desire to protect workers and reshore manufacturing, despite the risk that doing so could slow the fight against climate change. The Biden administration's recent decision to extend Trump-era tariffs on solar imports—with targeted changes—underscores a central policy dilemma in the administration over reconciling the trade and climate agenda with goals of protecting U.S. workers.

Another problem complicating the administration's climate agenda is that many states will challenge pieces of it. In August 2021, Missouri attorney general Eric Schmitt sued to block an order to take "social costs" into account when calculating the true cost of GHG emissions, despite the international endorsement of social costs as an appropriate measurement. Republicans generally favor climate policies that are focused on innovation and technologies, preferring a market-based approach to climate change mitigation. If Republicans gain a majority in either the House or the Senate in the 2022 elections, prospects for strong federal action will dim.

EUROPEAN UNION: GREEN SUBSIDIES

Although far from perfect, the European Union has made significant progress when it comes to climate change mitigation policies. While the European Union only accounts for 10 percent of global GHG emissions, it hopes that its climate policies, particularly the Carbon Border Adjustment Mechanism (CBAM), will result in the "Brussels effect," whereby European standards are exported and adopted abroad. While subsidies are not highly centralized in the European Union, certain parts of the renewable transition are handled at the EU level. In 2018, the European Union provided €92 billion in total energy subsidies, of which 30 percent went to solar, 22 percent went to wind, and 16 percent went to biomass.

The European Union's 2021–2027 budget focuses heavily on climate-related provisions, and budget funding is allocated for projects carried out by member states. Thirty percent of the €2 trillion Multiannual Financial Framework and NextGenerationEU supports climate action, and 37 percent of the €723.8 billion Recovery and Resiliency Facility plan is allocated to climate action. Additionally, the Modernization Fund, a key aspect of the European Green Deal that receives revenue from the Emmissions Trading System, offers funding to member states to help them achieve 2030 targets. The European Commission announced the first round of investments in August 2021, allocating €202 million for solar installations in the Czech Republic; €91 million for smart meter infrastructure, building efficiency, and electrical grids in Poland; and over €11 million to Hungary.

The European Commission expressly encourages public procurement of green goods in order to effectuate greener demand and consumption. The Green Public Procurement (GPP) is a voluntary instrument for member states to increase renewable procurement, which the commission defines as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services, and works with the same primary function that would otherwise be procured." Belgium, Denmark, the Netherlands, and Sweden are current leaders of green procurement, with 40 to 60 percent of their procurement considered green. Denmark is estimated to spend €5.5 billion per year on GPP, or 13 percent of their procurement budget. Overall, the total EU procurement budget among EU member states is an estimated €2.3 trillion, meaning it has the spending power to move renewable markets.

Underscoring the complexities at the nexus of trade and climate, ambitious EU proposals are sometimes complicated by the fact that the bloc depends on imports to realize its climate ambitions. For example, the European Green Deal sets a target of 40 percent renewable energy by 2030, but the European Union is a net energy importer, meaning decarbonization will either require imports of green technology, including

cheap Chinese imports, or Europe will need to scale up domestic production on an industrial scale, or both. In the European Union, feed-in tariffs, which promise small producers of renewable energy an above-market price for their energy, account for 70 percent of total renewable subsidies. Furthermore, understanding that their own emissions reductions will be insufficient in bringing the world back from the climate brink, the European Union is taking advantage of the opportunity to lead climate policy standards for other countries, particularly China and the United States. The impetus behind the European Union's CBAM is to reduce free-riding among other countries with less ambitious climate goals, reduce carbon leakage, and spur greater commitments among major emitters, such as China and the United States. That would have the additional advantage of making EU domestic policies more politically palatable.

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However, it remains to be seen if the CBAM will exacerbate trade tensions that could ultimately slow the bloc's decarbonization agenda. It appears likely that EU implementation of a CBAM would present other nations with three scenarios at the nexus of trade and climate. The first is a death spiral—a cycle of mutual recrimination and charges of protectionism whereby countries abandon multilateral commitments and fail to meet their emissions targets. The second is a virtuous cycle, whereby countries follow the EU lead, meet their multilateral commitments, and facilitate a race to the top to combat climate change. A third scenario may amount to a "big yawn," whereby countries conclude that the EU action will have no immediate impact on them and simply continue along their own paths.

CHINA: GREEN SUBSIDIES

China's climate policies and climate spending are ambitious, but it remains to be seen whether current and future Chinese climate mitigation efforts will reverse the catastrophic effects of climate change or whether China's plan represents big money with small goals. Although China lags significantly behind the European Union and United States in terms of climate change mitigation, it has succeeded in terms of scaling up production of green goods and ensuring that the price of renewable energy is competitive. From 2010 to 2020, China invested $818 billion in the renewable energy sector, far outpacing the United States. Nevertheless, China maintains the modest goal of sourcing 16.5 percent of its power consumption from solar and wind by 2025. This pales in comparison to EU and U.S. energy objectives, despite China's position as the global leader when it comes to the total amount of installed wind and solar capacity.

China has pledged to achieve carbon neutrality by 2060, and meeting that target will require massive government spending. That goal is estimated to cost $14.7 trillion, averaging an astonishing $4.9 trillion per decade, equal to multiple Marshall Plans of capital deployment per year and surpassing the annual Chinese budget, which in 2020 was $3.4 trillion. In 2020, China's budget for renewable power subsidies grew 14 percent over the previous year, amounting to $13 billion in total. In a move indicative of the success of China's scale-up of renewable energy, China halted subsidies in August 2021 for new onshore wind projects, concentrated solar photovoltaic power plants, and distributed solar photovoltaic projects for commercial use since these projects are now price competitive with coal-powered electricity.

> *It remains to be seen whether current and future Chinese climate mitigation efforts will reverse the catastrophic effects of climate change or whether China's plan represents big money with small goals.*

While China has phased out wind and solar subsidies, it continues to subsidize EVs. Between 2009 and 2017, China subsidized the new electric vehicle (NEV) industry—including battery electric, plug-in hybrid, and hydrogen fuel cell vehicles—with an estimated $58.7 billion in R&D, tax exemptions, and financing for EV charging stations. China has invested heavily in battery R&D and has erected trade barriers to foreign sales in the Chinese battery market. China also incentivizes NEV manufacturing through a dual-credit policy, a quota/subsidy system that rewards NEV fleet share increases. China also encourages demand by providing subsidies to keep costs low, and since 2013, China has provided direct subsidies to automakers to lower the price of NEVs. In 2020, direct subsidies started at $1,400 for vehicles with a range of 250 km and increased to $3,600 for vehicles with a range of 400 km. Provincial governments can supplement central subsidies up to 50 percent. China also waives sales tax on NEV purchases and has been steadily increasing government procurement of NEVs, which is estimated to account for over 40 percent of all sales between 2007 and 2017.

In addition to subsidies, China has implemented a number of trade barriers on NEVs. First, the Ministry of Industry and Information Technology has a "whitelist" of batteries in Chinese NEVs, basically all domestic Chinese batteries, that qualify for subsidies. If a car sold in China has a non-approved battery, it does not receive the buyer subsidy. Second, China places a 25 percent or higher tariff on foreign car sales to incentivize domestic joint ventures. These joint ventures often come with requirements for technology transfer that can disincentivize foreign EV manufacturing in China. Third, China uses its air quality standards as a tool to bar foreign sales domestically. For example, new standards for heavy-duty trucks in China are stricter than in the European Union, incentivizing purchases of domestic trucks.

GREEN SUBSIDIES OVERVIEW

The United States, European Union, and China are pursuing individual approaches to climate change. The United States' approach can be characterized as moderate spending with moderate goals. Compared to the European Union and China, U.S. spending on climate change mitigation is unambitious, and even moderate proposals are being met with fierce opposition in Congress. On the other hand, China is spending big, although its goals, if they are indeed easily attainable, are too modest to achieve sufficient decarbonization, and its goal of achieving carbon neutrality by 2060 is likely too late to stave off significant environmental deterioration. Since the European Union accounts for a far smaller share of global emissions, it arguably has a smaller, albeit steeper, hill to climb since reducing emissions will likely become more difficult as the low-hanging fruit gets picked first. In other words, the United States has a greater long-term opportunity to invest in renewable energy and decarbonization over time, realizing that immediate, large-scale investment is politically impossible.

> *Compared to the European Union and China, U.S. spending on climate change mitigation is unambitious, and even moderate proposals are being met with fierce opposition in Congress.*

Carbon Pricing and Border Adjustments

EU CBAM AND WTO COMPATIBILITY

In addition to domestic measures to combat climate change, some actors—particularly the European Union—have begun exploring carbon border adjustment measures, which have both domestic and international consequences. The European Commission released its **Fit for 55 proposal**, which has a target of a 55 percent reduction in carbon emissions by 2030. This proposal also contains the bloc's **CBAM**, which has garnered considerable attention worldwide. The CBAM, which covers iron and steel, aluminum, electricity, fertilizers, and cement, is intended to address both carbon leakage—the idea that companies move production offshore to profit from other countries' lower standards for carbon-intensive production—and the harm done to domestic industries by imports from lower-standard countries.[3] The CBAM **requires** importers to the European Union to purchase carbon certificates equivalent to the price and amount of carbon produced during production or manufacturing. The proposal uses the European Union's Emissions Trading System (ETS) rules for carbon pricing to determine the cost. Under the ETS, the European Union grants emissions allowances—which function like permits to emit carbon—that are either allocated for free, auctioned off, or traded. The EU cost of carbon hit a record high of **€97.50** ($106.67) per ton in February 2022. However, a persistent problem with the ETS price is that it is driven by supply and demand, and demand has so far been inadequate, in part a result of subsidized fossil fuel energy, which has kept the carbon price artificially low. Climate experts believe the price of carbon should be significantly higher—near $125 per ton—for these policies to have real impact.

The CBAM will reduce the number of emissions allowances for all sectors and phase the allowances out entirely by 2035 to mitigate carbon leakage. However, if non-EU producers demonstrate their imports already include the carbon price in the exported products, the corresponding certificate cost can be fully deducted. With a gradual phase-in, the CBAM initially only applies to five identified sectors that have a high risk of carbon leakage: iron and steel, cement, fertilizer, aluminum, and electricity generation. A recent **E3G study** found that the total net CBAM cost would equal roughly €1.0 billion in 2026 across imports from the European Union's six major trading partners. That number increases to €1.6 billion in 2035. According to the **CBAM regulation**, the United States is barely affected, while the most affected countries are Russia, Ukraine, and Turkey, whose iron and steel exports take the biggest hit. A United Nations Conference on Trade and Development **study**, however, found that Chinese products, in particular aluminum, would be the second most affected by a CBAM after Russia. The fees collected from the CBAM will then be used in the European Union's budget and will be allocated toward climate projects. With the gradual phase-in of the CBAM, importers would have to report the embedded emissions in their goods during the transition phase, beginning in 2023.

The system is intended to be finalized and functional by 2025, at which point the European Commission will re-evaluate its effectiveness and decide whether or not to extend the CBAM to additional goods, products, and services, potentially including financial services. This framework intends to encourage non-EU countries to embrace green technologies and decarbonization of their production processes. The CBAM is designed to cover imports from all non-EU countries and least developed countries (LDCs) which do not participate in the EU ETS or have their own ETS. A major shortcoming of the CBAM is that it does not **cover** agriculture, which **accounts** for 10 percent of EU emissions. The CBAM does cover electricity since importers of fossil fuels combust them in the European Union and are thus subject to taxes and

3. A recent **proposal** would expand the CBAM to cover organic chemicals, hydrogen, and polymers. It would also shorten the transitional period from three years to two.

CO_2 credits. However, this system could also create a bureaucratic headache for third-country producers of renewable power, for example, solar power from Morocco. While the CBAM is already an ambitious proposal on its own, the European Commission will announce a revised ETS in January 2023.

The European Commission has repeatedly **argued** that its CBAM has been designed to comply with WTO rules. However, affected countries, such as China, Russia, Turkey, and Ukraine, have **claimed** that the new border mechanism is a protectionist policy disguised as a climate mechanism. The burden will therefore fall on the European Union to demonstrate that the CBAM is transparent, non-preferential, and reciprocal. There are several ways this could play out.

An immediate area of concern surrounding the CBAM is whether or not it is inherently discriminatory. Since other countries exporting like products with weaker carbon emissions standards would have to pay higher fees, the CBAM could violate the Most Favored Nation Principle (MFN) in GATT Article I, which establishes the fundamental principle of the WTO. MFN stipulates that imported goods should be treated equally as locally produced goods, and as proposed, the European Union's CBAM would treat such products differently. However, since products' varying levels of carbon-intensity may reduce their likeness, it may not constitute discrimination or an MFN violation.

A CBAM could also encounter problems with regard to GATT Article III, which requires that any internal regulations, laws, and trade practices offer national treatment and not provide any preferential treatment or protection for domestic goods or production over imported products. If the CBAM price is only **applied** to imported goods, this could constitute an Article III violation. However, the CBAM could be considered WTO-compliant if the carbon pricing scheme charges fees no higher than the domestic carbon emissions tax. Since the CBAM complements the EU ETS, these tied measures may help avoid an Article III violation.

Forcing LDCs to adjust their supply chains and update their production facilities to decarbonize could put additional burden on these economies, although the EU proposal does leave room for developing country exemptions. However, charging a price based on the average emission amount within a country could result in individual exporters paying higher fees, despite using more efficient processes, which could violate Article III.2. In addition to the aforementioned potential inconsistencies with WTO rules, the CBAM could also potentially violate Article 10.1 of the **Trade Facilitation Agreement**, which seeks to limit the bureaucratic complexity of imports and exports, such as burdensome paperwork. Additional requirements for importers could create a substantial compliance burden, which many experts regard as the most onerous and potentially consequential part of the CBAM. As the incidence and complexity of the products' importation documentation process grows, this could directly contradict trade facilitation commitments.

A CBAM could qualify as consistent with WTO rules under GATT Article XX(b) general exception, which permits certain behavior "necessary to protect human, animal or plant life or health." One issue with relying on Article XX(b) is whether the CBAM can satisfy the chapeau requirements, which require a country seeking to use the exemption to provide non-preferential treatment among countries with like conditions and which also stipulate that the CBAM not constitute a disguised trade restriction. That the CBAM complements the ETS further bolsters its credibility in terms of consistency with existing WTO rules. However, the European Commission must ensure that domestic producers are not favored over international producers with regard to the carbon pricing fee.

The application of the CBAM must not favor domestic production and must be levied in a fair and consistent manner. The justification of the CBAM must also be focused on the protection of the climate and the environment, not on protecting the competitiveness of European businesses against carbon

leakage. However, the European Union has indicated it will only rely on an Article XX defense as a last resort. Despite opponents of the CBAM claiming the proposal is a protectionist measure disguised as environmental policy, the implementation of this policy has advanced global discussions on decarbonization, and the possibility of it being implemented will likely encourage other countries to step up their own climate commitments.

THE UNITED STATES' BORDER CARBON ADJUSTMENT

Despite the administration's stated reluctance to pursue a CBAM, immediately following the formal release of the European proposal, Senator Chris Coons (D-DE) and Representative Scott Peters (D-CA) introduced the FAIR Transition and Competition Act of 2021, which would establish a border carbon adjustment (BCA), but it has not thus far been included in the reconciliation package. The legislation proposes adding a fee on imported goods equivalent to the average domestic environmental cost incurred for the sector by its upstream GHG emissions or the sector benchmark emissions by the domestic environmental cost incurred by production. The proposal identifies steel, aluminum, cement, iron, natural gas, petroleum, and coal as primary targets. As proposed, the BCA differs from the European proposal in several ways. The CBAM is fundamentally based on a regulatory scheme that requires exporters to buy ETS credits. The United States does not have a domestic price on carbon or an emissions trading scheme. Unlike the CBAM, the U.S. BCA does not cover electricity, but it does cover fossil fuels. Funds raised via the BCA would be allocated to climate adaptation measures, climate technology investments, and support for workers adversely affected by climate change. With the United States transitioning toward cleaner technologies and production capacities, this mechanism aims to level the playing field by reducing the advantages of cheaper, more polluting technologies.

The politics of a U.S. CBAM remain murky. Some think the Coons-Peters proposal was a trial balloon to test public and congressional support for a U.S. CBAM. Others saw it as an effort to push the administration in that direction. Either way, it is viewed as a placeholder that is unlikely to become law but which might set the stage for a more detailed proposal. Even if that appears, however, it will also suffer from the fact that the United States does not have a national price on carbon, which complicates measuring, implementation, and enforcement of any CBAM. The U.S. failure to institute a domestic carbon price also continues to hurt U.S. credibility abroad.

> *The politics of a U.S. CBAM remain murky. . . . failure to institute a domestic carbon price also continues to hurt U.S. credibility abroad.*

Climate Ambitions: U.S. States and EU Member States

Aside from federal action, several states have launched initiatives to reduce emissions. Eleven states (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, and Virginia) have established the Regional Greenhouse Gas Initiative (RGGI), a regional cap-and-trade program for the power sector. However, with a carbon price of just over $7, this regional initiative is much closer to China in its modest ambition than to European efforts. California also has an economy-wide cap-and-trade system, which is designed to encourage decarbonization over time. Finally, Washington state is expected to enact a cap-and-invest program that is set to launch in 2023. While these state initiatives represent progress on climate, they are a far weaker alternative to currently proposed federal regulation and incentive programs and pale in comparison to EU member state efforts.

MOST CLIMATE AMBITIOUS U.S. STATES

Selected based on carbon intensity of electricity generation, total share of electricity generated from renewables, and environmental goals.

State	Share of Electricity Consumption Produced Renewably (2020)	GHG Goal	Carbon Pricing Policy	Electricity Portfolio	EV Policies	GHG Emissions Intensity of Electricity Generation (2020)
California	33%	40% below 1990 levels by 2030	Cap and trade	Renewable standard: 100% of electricity sales from renewable sources by 2045	Decoupling: both gas and electric	385 lbs CO_2/MWh
Maine	79%	Neutrality by 2045	RGGI cap and trade member	Renewable standard: 100% of electricity from renewable sources by 2050	Decoupling: electric only	210 lbs CO_2/MWh
Washington	90%	100% by 2045	Cap and trade	Clean energy standard: 100% clean energy by 2045	Decoupling: both gas and electric	216 lbs CO_2/MWh

LEAST CLIMATE AMBITIOUS U.S. STATES

Selected based on carbon intensity of electricity generation, total share of electricity generated from renewables, and environmental goals.

State	Share of Energy Consumption Produced Renewably (2019/2020)	GHG Goal	Carbon Pricing Policy	Electricity Portfolio	EV Policies	GHG Emissions Intensity of Electricity Generation (2020)
West Virginia	5.5%	No reduction/ reporting requirements	N/A	N/A; repealed renewable portfolio standard in 2015	N/A	1,911 lbs CO_2/MWh
Kentucky	7%	No reduction/ reporting requirements	N/A	N/A	Lost revenue adjustment: both gas and electric	1,715 lbs CO_2/MWh
Indiana	9%	No reduction/ reporting requirements	N/A	Clean energy goal: 10% of electricity produced renewably by 2025	N/A	1,542 lbs CO_2/MWh

MOST CLIMATE AMBITIOUS EU MEMBER STATES

Selected based on carbon intensity of electricity generation, total share of electricity generated from renewables, and environmental goals.

Member State	Share of Energy Consumption Produced Renewably (2019)	GHG Goal	Carbon Tax Rate	Electricity Portfolio	EV Incentives	GHG Emissions Intensity of Electricity Generation (2019)
Sweden	56.3%	Net zero by 2045	€116.33/ metric ton (highest in the world)	Renewable energy standard: 100% of energy production from renewable sources by 2040	Government grants available for both EV vehicle and charging station purchases	12g CO_2e/kWh
Latvia	40.9%	Net zero by 2050	€12.00/ metric ton	Partial renewable energy standard: 40% of energy generated from renewables by 2020	Government subsidizes new EV purchases	150g CO_2e/kWh
Austria	33.6%	Net zero by 2050	N/A	100% renewable electricity supply by 2030	Grants available for chargers and new EV purchases; EVs also largely tax exempt	94g CO_2e/kWh

LEAST CLIMATE AMBITIOUS EU MEMBER STATES

Selected based on carbon intensity of electricity generation, total share of electricity generated from renewables, and environmental goals.

Member State	Share of Energy Consumption Produced Renewably (2019)	GHG Goal	Carbon Tax Rate	Electricity Portfolio	EV Policies	GHG Emissions Intensity of Electricity Generation (2019)
Hungary	12.6%	Net zero by 2050	N/A	Unclear electricity goals	Some application-based EV grants available	226g CO_2e/kWh
Poland	12.2%	23% of final energy consumption will be from renewables by 2030; 30% reduction by 2030; only member to not commit to the EU's net zero by 2050 goal	N/A	Partial renewable standard: goal of 14% of electricity generation from renewables by 2030	Some purchase and tax incentives available	751g CO_2e/kWh (highest in EU)
Czech Republic	16.2%	Net zero by 2050	N/A	Unclear electricity goals	EVs exempt from purchase and road taxes	432g CO_2e/kWh

China's National Carbon Trading Market

In 2019, China consumed more coal than the rest of the world combined, and while the country's progress on climate mitigation has been slow, it is rapidly improving. Since 2013, China has launched eight initial pilot programs for a carbon ETS in different parts of the country. The Shenzhen Emissions Trading System was organized under the Ministry of Ecology and Environment, and the National Carbon Market was officially launched in 2017. This program was officially condensed into a national carbon ETS in July

2021. Included within Beijing's 5-year plan (2021–2025) and the culmination of the previous eight pilot ETSs, the Chinese carbon trading program establishes a system where companies buy and sell permits to emit CO_2 or other GHGs. However, the GHG emissions management systems calculate the annual CO_2 emissions through submitted reports and documentation, and no onsite audits are used in the verification process. Furthermore, the current ETS only encompasses the energy sector, which significantly reduces the effectiveness of the system, although the eventual plan is for it to extend to the steelmaking, construction, and chemical industries.

Despite the potential to make some progress on combating climate change, the Chinese ETS has several shortcomings, primarily its low carbon price. The market opened on the Shanghai Environment and Energy Exchange with an initial price of ¥48 per ton, equal to $7.40 per ton, although by February 2022 the price had already climbed to $10.22 per ton. While the price increase has been fairly quick, the low cost of carbon still compares unfavorably to the European price of roughly $103 per ton in February 2022. Additionally, excess allowances are allocated to companies for free rather than placing the permits up for auction. Therefore, the quota would create an oversupply of permits and with no limit or cap on total emissions. Overall, this trading system is much more limited than the EU ETS, ultimately diminishing the viability of the policy.

With the goal of reaching peak carbon emissions in 2030 and carbon neutrality by 2060, China's ETS demonstrates modest but likely insufficient progress. While complaints have warned of the system being too limited, current implementation reflects only phase one of the EU ETS rollout. This trial phase with relaxed rules is intended to introduce the system to encourage buy-in from companies, meaning the gradual introduction of the National Carbon Trading Market will likely lay the foundation for future stricter legislation and actions by the Chinese government. Furthermore, it remains to be seen whether the Chinese ETS is a first step in a more comprehensive international climate agenda, one that would more closely align with the EU and U.S. agendas.

Overall, China has established ambitious goals to combat climate change, but it is far too slow in implementing them to make meaningful progress in time to stave off catastrophe. However, leveraging trade and investment is likely to be a more successful strategy for persuading China to ramp up its climate commitments than pressure and diplomatic negotiation, particularly since progress on climate has stalled domestically in the United States, reducing U.S. negotiating leverage. In July 2021, a group of environmental NGOs, including the Sunrise Movement and MoveOn, penned a letter to President Biden urging the administration and Congress to "eschew the dominant antagonistic approach to U.S.-China relations and instead prioritize multilateralism, diplomacy, and cooperation with China to address the existential threat that is the climate crisis." Despite a September 2021 meeting in which the Chinese hinted at wanting to expand the scope of climate talks, it is unlikely that the United States and China will be able to cooperate overtly on climate in the face of the many other divisive issues. That does not, however, preclude them from moving in parallel toward climate goals they both share and which respond to domestic political imperatives in both countries.

Comparison of United States, European Union, and Chinese Sectoral Energy Ambitions

	United States		European Union		China	
	Goal	Year	Goal	Year	Goal	Year
Solar	45% of energy	2050	20% of energy	2050	23% of energy	2060
Wind	30 GW offshore	2030	50% of energy (33% onshore, 17% offshore)	2050	24% of energy	2060
Nuclear	None	None	15% of energy	2050	15% of energy	2060
Hydrogen	Double or Quadruple	None	40 GW	2030	1 million cells	2030
Biomass	None	None	2% of energy	2050	5% of energy	2060
NEVs*	50% of sales	2030	55% emissions reduction; 100% emissions reduction	2030; 2035	40% of sales	2030

Sources: Authors' compiliation from **White House**, **U.S. Department of Energy**, **European Commission**, **Clean Energy Wire**, **Reuters**, **MIT**, **Bloomberg**.

Comparison of United States, European Union, and Chinese Sectoral Energy Priorities

	United States	European Union	China
Solar	High Priority	Medium Priority	High Priority
Wind	Medium Priority	High Priority	Medium Priority
Nuclear	Low Priority	Medium Priority	High Priority
Hydrogen	Low Priority	High Priority	High Priority
Biomass	Low Priority	Low Priority	Low Priority
NEVs*	High Priority	High Priority	High Priority

Source: Authors' research and analysis.

*New-Energy Vehicles (NEVs) include battery electric, plug-in hybrid, and hydrogen fuel cell vehicles.

Climate change is a problem of the global commons, but implementation of solutions will inevitably be national. Therefore, it is best if world leaders in climate solutions—including China, the European Union, and the United States—collaborate to find common ground rather than pursuing inconsistent policies. One good place to begin to move toward policy convergence is by working to establish a common methodology for life-cycle carbon assessments, which can best be done through existing multilateral frameworks, such as the OECD. While China is not a member of the OECD, the European Union and United States should work together to establish an agreed-upon methodology for measuring carbon in order to preempt accusations of protectionism and forestall litigation at the WTO while creating more certainty in international markets. Success in such an effort would make the virtuous circle outcome referred to above more likely.

Other Multilateral Trade and Climate Initiatives

CLIMATE CHANGE EFFORTS AT THE WTO

While lack of political will makes it unlikely that environmentally harmful subsidies will see substantial reform in the near future at the WTO, there are other ongoing efforts within the WTO system aimed at fighting climate change. In November 2019 at the United Nations, New Zealand launched the Agreement on Climate Change, Trade, and Sustainability (ACCTS) initiative with Costa Rica, Fiji, Iceland, and Norway to leverage trade rules to tackle climate change. The ACCTS aims to remove tariffs on environmental goods, make new commitments on environmental services, establish binding rules to eliminate fossil fuel subsidies, and develop voluntary eco-labelling guidelines. The effort also aims to build on stalled G20 and Asia-Pacific Economic Cooperation commitments to remove fossil fuel subsidies. As of April 2021, ACCTS leaders plan to introduce a statement at MC12 on fossil fuel subsidy reform, which the European Union plans to join for the first time. The United States and China are not joining. Although it is commendable for countries such as New Zealand to take creative approaches to climate problems—for example, by designing a unique, open plurilateral to tackle environmental problems—this approach is far less desirable than a multilateral agreement among members to jointly address an urgent global commons problem. Furthermore, while plurilateral efforts may seem like the only viable option, WTO member states can—and must—do better.

In Decemer 2021, the WTO announced it would advance three ongoing environmental initiatives: the Trade and Environmental Sustainability Structured Discussions (TESSD), the Informal Dialogue on Plastics Pollution and Sustainable Plastics Trade (IDP), and Fossil Fuel Subsidy Reform (FFSR).

- **TESSD:** Canada introduced TESSD in November 2020 on behalf of the Friends Advancing Sustainable Trade. In February 2022, TESSD participants presented a draft plan to members that outlined six key areas of focus, including facilitating the trade of environmental goods and services, as well as assessing the environmental effects and trade impacts of subsidies. TESSD is scheduled to convene three times in 2022, while informal working groups will continue to meet for more detailed discussions over trade-related climate masures, environmental goods and services, and circularity. TESSD sponsors include Australia, Canada, Chad, Chile, China, Costa Rica, the European Union, The Gambia, Fiji, Iceland, Japan, Liechtenstein, Maldives, Mexico, Moldova, Montenegro, New Zealand, North Macedonia, Norway, Senegal, South Korea, Switzerland, Taiwan, the United Kingdom, and the United States.

- **IDP:** At the November 2020 Committee on Trade and Environment meeting, Fiji introduced a statement establishing the IDP as an open-ended informal dialogue to explore how the WTO could contribute to domestic and global efforts to reduce plastics pollution and foster plastics trade sustainability. It coincides with a similar push for reducing plastics multilaterally at the UN Environment Assembly. Since its inception, the IDP has been spearheaded by Australia, Barbados, China, Ecuador, Fiji, and Morocco and has the personal backing of WTO director-general Okonjo-Iweala. The release of a factual report and potential declaration is planned for MC12. As of October 2021, sponsors include Australia, Barbados, Cabo Verde, Canada, the Central African Republic, China, Ecuador, Fiji, The Gambia, Jamaica, Kazakhstan, Morocco, New Zealand, Switzerland, Thailand, and the United Kingdom.

- **FFSR:** FFSR, an effort New Zealand launched in 2017, aims to phase out inefficient and environmentally destructive fossil fuel subsidies. For now, the FFSR is a dialogue among countries, but FFSR members hope that it will spur more systemic change within the WTO regarding fossil fuel subsidies. The European Union signed the draft ministerial declaration ahead of the originally scheduled MC12, but the United States and China did not.

OTHER MULTILATERAL CLIMATE EFFORTS

Outside of individual country efforts and ongoing efforts at the WTO, multilateral efforts on climate change paint a worrisome picture about international follow-through on climate commitments. The Paris Agreement, signed in 2015, stipulated that developed countries would voluntarily commit $100 billion annually to fight climate change by 2020. In 2019, countries mobilized $79.6 billion for climate finance for developing countries, an increase of 2 percent from the preceding year. A lack of international accountability can make it easy for countries to shirk responsibility on emissions reductions, which can contribute to free-riding among countries. One concern for countries meeting their aid goals revolves around the "reclassification" of existing aid flows, meaning that some contributions that indirectly promote climate change resiliency (such as safe drinking water and microfinance schemes) are not counted as climate change contributions but rather as general development contributions. Moreover, this modest goal of raising $100 billion from developed to developing countries to help combat climate change pales in comparison to estimates of the total cost of climate change mitigation. The IEA estimates that for the world to reach net-zero emissions by 2050, global clean energy investment annually would need to triple to $4 trillion. McKinsey estimates that achieving climate neutrality in Europe alone by 2050 requires €28 trillion in investments over the next 30 years. Morgan Stanley estimates that reducing global net carbon emissions to zero by 2050 would cost $50 trillion.

Beyond the Paris Agreement and the WTO, there are several other multilateral climate initiatives. The G20's 2021 themes are "People, Planet, and Prosperity," highlighting the prioritization of multilateral climate solutions in this forum. However, G20 energy and environment ministers failed to advance two key commitments at their annual summit—phasing out coal and preventing planetary warming below the Paris targets. Opposition to these changes came primarily from China, India, and Russia, and the modest commitments agreed to at the summit almost did not materialize due to last-minute disagreements from China. While the G20 reaffirmed its prior commitment to contributing $100 billion annually to climate programs in developing countries, no additional progress was announced. However, the Energy-Climate Ministerial Communiqué still featured a notable advancement on methane reduction.

In June, the G7 plus Australia, India, South Africa, and South Korea committed to achieve net-zero emissions by 2050, halve emissions by 2030, conserve or protect at least 30 percent of land and oceans by 2030, phase out coal financing by 2030, and establish new mandatory corporate climate disclosures. The G7 also reaffirmed a prior commitment to contribute $100 billion to climate programs in developing countries, but no additional detail was provided.

In April 2021, President Biden reconvened the Major Economies Forum (MEF) on energy and climate. This U.S.-led forum has 17 members, representing 80 percent of global GHG emissions and GDP. The group was first convened under President Obama and met periodically between 2009 and 2016. Under President Trump, the group met under the auspices of the EU-hosted Ministerials on Climate Action. During the MEF's Leaders Summit on Climate, Argentina, Brazil, Canada, China, the European Union, Japan, Russia, South Korea, the United Kingdom, and the United States all committed to varying degrees of stronger climate actions. The United States notably committed to doubling annual climate financing to developing nations by 2024, based on the average of contributions from 2013 to 2016. Members of the MEF are Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, South Africa, South Korea, the United Kingdom, and the United States.

In November, global leaders convened at the COP26 in Glasgow, Scotland, in a bid to increase cooperation on combating climate change. Although the Glasgow conference fell short on a key objective—phasing out coal production—it nonetheless saw progress in other areas, namely the Global Methane Pledge, which

seeks to reduce methane emissions by 30 percent by 2030 and drew over 100 signatories. While there were other positive surprises, such as Saudi Arabia and Russia committing to a net-zero future, the conference demonstrates that international cooperation and progress on climate will likely be issue-specific, fractured, and incremental over time.

Recommendations

With a rapidly deteriorating climate, the international community is facing a global commons problem that requires urgent action. However, in tandem with the quest for climate mitigation strategies, a trend of increased protectionism in trade policy has emerged. As countries seek to deploy new technologies, scale up renewables, and reduce emissions, the European Union, China, and the United States are each in various stages of considering policies that erect barriers, which, if not coordinated, could slow the global effort toward decarbonization. Trade is a tool that can be used to accelerate efforts to combat climate change, and it is important that China, the European Union, and the United States work together to coordinate trade policies that will more effectively mitigate climate change, including:

- Reducing environmentally harmful and trade-distorting measures;
- Reducing domestic fossil fuel subsidies, and committing to eliminate them completely by 2030;
- Reducing tariffs on environmental goods that have direct environmental benefits;
- Joining current and future multilateral climate efforts; and
- Pursuing a global agreement on life-cycle carbon assessments at the OECD.

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Countries should immediately work to remove environmentally harmful measures that are also trade distorting. While a deal to curb harmful subsidies at the WTO is unlikely, that should not preclude countries from pursuing domestic policies that will help them reallocate environmentally harmful subsidies toward climate friendly objectives. This includes phasing out fossil fuel subsidies, reducing subsidies that incentivize monoculture, and eliminating fishery subsidies. While a reduction or removal of fossil fuel subsidies could result in price increases, the IEA projects that energy costs and associated emissions will decrease over time due to technological advancements that streamline efficiency. Everyone—companies and citizens alike—will have to pay a price now for the benefit of having a habitable planet. Without significant price changes, economic behavior is unlikely to change, especially at a pace necessary to avert global disaster. As historian Adam Tooze writes, "What is at stake, entwined with questions of environmental policy, is the kind of regime we govern contemporary capitalism with." In addition to enacting significant policy changes at the domestic level, China and the United States should join ongoing climate efforts at the WTO. Ahead of MC12, signing the joint communiqué on the need for fossil fuel subsidy reform would enhance U.S. credibility in Geneva and signal to the international community that the United States is serious about changing harmful subsidy behavior.

China, the United States, and the European Union should also work in concert to make sure their domestic incentives for the green transition are WTO compliant. The WTO definition of a subsidy is broad, but it nevertheless provides leeway for climate objectives and is broadly regarded as compatible with worldwide efforts to decarbonize, whether through incentivizing EVs or clean power. In choosing what policies to pursue, countries must navigate among the potentially conflicting goals of accelerating the transition to renewables, providing jobs and growth for their domestic renewables industries, and respecting international trade rules. The United States, European Union, and China appear to be choosing different paths.

For example, in the case of solar panels, the Biden administration is trying to resolve the dilemma by subsidizing domestic production through tax credits. If properly designed, the government can stimulate domestic production and job growth and not delay new installations by keeping the price of domestic products artificially low and thus competitive with imports (as of this writing the legislation has not been enacted and is not final). In that scenario, the taxpayers will ultimately bear the burden of subsidization, but in the short- and medium-term, the government could achieve its job creation objectives without slowing down solar panel installation. The administration appears to be sacrificing adherence to trade rules in an attempt to reconcile conflicting policies which involve either sacrificing domestic production for cheap imports or cutting off imports and slowing the renewable tranisition.

If the tax credits prove large enough to convince developers and investors to accelerate production, then the Biden administration will have succeeded in implementing a policy that makes U.S. products cost-competitive with foreign imports. However, if the price differential does not take into account current tariffs or if the tariffs are reduced over time, then the policy will likely be insufficient in achieving its objective. In February 2022, the Biden administration announced a four-year extension of the Trump era tariffs on solars, meaning most imports of solar cells and panels will be subject to 14 to 15 percent tariffs. However, the Biden plan includes some changes, such as exempting bifacial panels and doubling the tariff rate quota on solar cells to 5 gigawatts. With the continuation of 15 percent tariffs, the price gap between imported cells and those made domestically with tax credits would be relatively small. These credits could potentially offset that 15 percent tariff cost, while removing the Section 201 tariffs would mean the price advantage for imports may be insurmountable from a U.S. domestic production perspective.

Another complicating factor is the prohibition in U.S. law on imports of products made by forced labor. The prohibition means that the United States may ultimately keep Chinese solar products out of the U.S. market, as well as panels from other countries that incorporate Chinese solar cells. It seems that the administration's goal is to avoid these complexities and create an incentive that is substantial enough not to slow down installations while at the same time protecting and stimulating the domestic industry. However, these U.S. policies inherently discriminate against foreign products and are thus inconsistent with WTO rules. The proposed EV tax credit, for example, would violate the national treatment obligation outlined in GATT Article III, which seeks to eliminate hidden domestic barriers to foreign competition. Furthermore, the SCM Agreement stipulates that "subsidies contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods" are actionable subsidies, meaning that this tax credit and other local content requirements in the Build Back Better agenda are likely to invite legal challenges in Geneva.

China, meanwhile, has a different approach to reconciling its renewable transition with trade rules and domestic production. China has used a combination of investments and subsidies to boost its renewable energy sector, which contributes to reduced emissions domestically. Furthermore, the export of cheap green goods abroad has helped other countries reduce their emissions. While the subsidies for wind and solar projects have been phased out, the Chinese EV industry continues to receive significant subsidies and

is protected by a number of trade barriers, as discussed above. This policy combination ensures that China accelerates emission reductions and insulates its domestic industry. However, China's policies fall short of international rules since many of them, particularly subsidies, result in adverse effects among other WTO members. China therefore chooses emissions reduction and protection of domestic industry over many of its international trade commitments, similar to the United States' approach.

In contrast, if any party has managed to reconcile these policies—incentivizing domestic production, accelerating decarbonization, and maintaining consistency with WTO rules—it is the European Union. Through its CBAM, the European Union has simultaneously managed to protect domestic industries that have made progress on decarbonization and encourage the adoption of greater climate mitigation actions while arguably remaining consistent with international trading rules, although that will not be clear until the final version of a CBAM is adopted. However, the EU approach differs significantly from the U.S. approach in that its primary goal is to level the carbon playing field rather than enhance domestic production.

The common element among China, the European Union, and the United States is that each country subsidizes its domestic renewable energy transition. Policy convergence occurs with subsidies, but divergence occurs when it comes to border measures, as demonstrated by U.S. tariffs, the EU border adjustment, and Chinese import restrictions. These differences demonstrate that it can be exceedingly difficult for governments to reconcile all three policy goals. Achieving environmental objectives is not incompatible with trade rules, but domestic content requirements are, as are subsidies that cause injury in foreign markets. However, a properly constructed CBAM would be able to avoide trade law violations while also providing some relief to domestic industries, which the European Union may have succeeded in doing with its proposed CBAM.

> *If any party has managed to reconcile these policies—incentivizing domestic production, accelerating decarbonization, and maintaining consistency with WTO rules—it is the European Union.*

For a border adjustment to be compatible with WTO rules, it must meet two primary criteria. First, it must meet the non-discrimination test under GATT Article III, which prohibits domestic protection at the expense of foreign imports. A legally compliant border adjustment also must not violate GATT Article I, which prohibits discrimination among trading partners. As currently proposed, the EU CBAM fulfills both of these criteria, particularly since varying carbon content of goods affects the "likeness" of products traded.

CALCULATING CARBON CONTENT

If countries are to develop CBAMs that are reasonably congruent, common agreement on measuring carbon content will be necessary. Currently, the GHG Protocol has become the de facto voluntary global standard for measuring carbon emissions of an organization or product. This involves the calculation of scope one (onsite), scope two (offsite), and scope three (upstream, downstream) emissions and is recognized by governments and private industry alike. While this standard is viable as a voluntary methodology, it lacks both legal enforceability or, in the case of scope three emissions, standardized methodologies on a product basis. To avoid a death spiral of mutual protectionism and to build guardrails that guide the global community toward a virtuous circle of trade and climate policy, the international community should work together to use the methodology defined by the GHG Protocol as a basis for harmonizing methodologies and determining product-specific life-cycle carbon assessment (LCA) calculations.

A confluence of factors, including the complexity of measuring carbon content, a lack of legally defined carbon calculation boundaries, the nuance of trade policy, and the lack of political will for reaching an agreement, mean that the international community has yet to define a standardized carbon accounting methodology, which includes upstream and downstream emissions. Because the WTO is a consensus-based organization, it is not an appropriate forum for determining a standard methodology for product-based life-cycle carbon content. As standards are generally developed by specific industries and implemented as policy, the United Nations Framework Convention on Climate Change is also not appropriate because it is a top-down organization that is often slow-moving and overly bureaucratic. The IMF has been very active on climate in recent years and has produced some of the most accurate estimates of the economic consequences of climate change (IMF estimates include social costs of carbon, meaning IMF estimates are magnitudes larger than others). However, IMF estimates can be so severe that they disincentivize countries from participating, and they only have a top-down perspective, which excludes the impact of actions undertaken by individual organizations or industries. One expert interviewed for this project suspected that if the WTO were to use IMF estimates for trade distorting measures, countries such as Pakistan and Saudi Arabia would be dissuaded from engaging and would likely push the topic to a different organization, where it would idle indefinitely. Overall, multilateral efforts to harmonize methodologies for LCAs should occur in a forum that leverages data that can get countries to the negotiating table, is climate policy agnostic, and that is seen as faster moving and less political than organizations such as the United Nations.

With 38 members from North and South America, Europe, and the Asia-Pacific, the OECD emerges as the most effective candidate for standardizing LCA methodologies. In September, OECD secretary-general Mathias Cormann **outlined** why the OECD is the appropriate forum for convening leaders to establish a global carbon price. Diplomats present for those remarks regarded Cormann's statement as an effort to thwart EU CBAM efforts. However, there is no reason the OECD could not help establish a methodology for LCAs. By facilitating an agreement that would help countries harmonize their carbon accounting schemes, the OECD could deliberately choose to serve as a forum that helps countries avoid a race to the bottom, which in turn would reduce trade frictions and decrease the likelihood for litigation in Geneva.

Arguably, the call for supporting a standardized product-specific carbon calculation methodology is less politically sensitive and has higher-levels of support among industry leaders than establishing a price on carbon itself. In addition, a standardized methodology would be required for any future policy mechanism, whether that be carbon pricing or carbon border adjustments. Another benefit to pursuing a carbon accounting framework through the OECD is that, depending on how an agreement is negotiated, its **determinations** can be legally binding on signatories. This means that an OECD framework could be stronger than the Paris Climate Accord, which is based on voluntary and nationally determined commitments. To launch this multilateral effort, OECD members should begin with a working group of trade and climate experts that will jointly develop a methodology for carbon accounting that succeeds in prioritizing the fair and accurate accounting of emission responsibility while remaining consistent with international trade rules. The United States should launch this working group to spur progress on carbon accounting harmonization and align the U.S. domestic climate agenda with its multilateral agenda.

Finally, in addition to establishing a trade and climate working group at the OECD, the United States should join other multilateral trade efforts that align with its climate ambitions. While the United States announced in November 2021 that it would join the TESSD, it should join other climate change initiatives at the WTO, starting with the IDP and FFSR. In addition to the WTO framework, the United States should follow through on its multilateral climate commitments, including green financing goals announced at the UN General Assembly in September. U.S. diplomatic credibility is collateral damage in ongoing domestic

political disagreements on climate action. If the United States is unable to make meaningful progress on climate through Congress, the executive branch must pursue all available tools—including trade policy—to combat climate change.

Conclusion

What makes climate policy unique is that major emitting economies cannot free ride on other countries' decarbonization efforts because riding the coattails of another country while failing to change would still lead to global catastrophe. It is thus impossible for the United States to free ride on Chinese progress on climate change and or the Chinese to free ride on European policy changes. Only through concerted, multilateral action can the world make meaningful progress on climate change. However, China, the European Union, and the United States are continuing to pursue climate change policy on their own terms and on their own timelines, attempting to reconcile the need to combat climate change with protecting domestic industry, all while remaining consistent with WTO rules. The European Union is currently the only one close to achieving all three objectives.

Thus emerges an unfortunate similarity at the nexus of climate and trade policy among these three countries: unilateralism. This unilateral approach occurs in both trade-distorting policies that are environmentally harmful and domestic attempts to combat climate change. China, the European Union, and the United States each engage in trade-distorting policies that are environmentally harmful by taking advantage of grey areas in multilateral rules. For example, in China, fishery subsidies contribute to fish stock depletion worldwide and reduce the ability of oceans to absorb CO_2. In the European Union, agricultural subsidies account for the bloc's largest percentage of GHG emissions. In the United States, fossil fuel subsidies artificially depress carbon-intensive energy costs, which comes at the expense of increased spending on renewable energy projects. The three parties have yet to overcome their unilateralist proclivities to address a fundamental problem of the global commons.

Divergence among these countries occurs in the policy design and content of their domestic trade policies that interact with climate change mitigation goals. China, for example, has endeavored to **restrict** imports of foreign electric heavy-duty vehicles, such as buses and trucks, by creating a specific and arduous standards regime that is stricter than the European standard and which essentially prevents foreign companies from being able to compete in the Chinese market. The European Union has pursued plans to implement a carbon border adjustment in a bid to hedge against carbon leakage and encourage foreign partners to accelerate decarbonization. And the United States is pursuing a climate agenda that creates significant incentives for local content and production at the expense of imports, including within the **electricity** sector.

> *Divergence among these countries occurs in the policy design and content of their domestic trade policies that interact with climate change mitigation goals.*

In an era of increased uncertainty, existing WTO frameworks provide stability. WTO rules prohibit most forms of protectionist policies that may be discriminatory, even if they are geared toward combating climate change. However, WTO rules can also allow members to set their own environmental standards if they are implemented in a non-discriminatory manner. As previously noted, local content requirements in climate policies violate SCM Agreement rules, and jurisprudence has complicated the ability of countries

to hold each other accountable when it comes to environmentally deleterious subsidies. Despite this limitation, it is in the best interest of countries to design their climate agendas utilizing the existing WTO framework. If each country continues to pursue unilateral objectives, the risks are substantial. Not only would a continuation of unilateral policies likely violate WTO rules, but additional trade barriers would slow global efforts to combat climate change.

Despite the currently fragmented approach to trade as a tool to combat climate change, the best course of action, from both a trade and climate perspective, may be for the United States and China to follow the EU model. The EU CBAM could well end up being WTO compliant, elevate climate standards, and shield domestic industry from carbon leakage while rewarding heavy industry for its decarbonization efforts. In adopting their own equivalent border adjustments, the United States and China would reaffirm their commitment to a rules-based international trading system while simultaneously protecting domestic producers integral to domestic energy transition efforts. Furthermore, joint CBAM efforts would preclude the need to form climate clubs, which risk further fracturing the international system during a time that urgently demands global cooperation.

In the United States, the Biden administration should work toward liberalizing trade in green goods, avoid the temptation to include local content requirements in climate legislation, and use trade as a tool to push for a virtuous cycle of trade policies that expedites—not slows—the fight for our future. The administration's reluctance to commit to plurilateral climate efforts in Geneva, including restarting Environmental Goods Agreement negotiations, directly conflicts with its agenda to improve global qualify of life, combat climate change, grow the domestic economy, and reengage with multilateral partners.

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The primary political and policy implications of carbon border adjustments are that, when designed correctly, they can achieve policies that comply with existing WTO rules, protect decarbonized domestic industries, and spur positive change among other international actors. The next few months and years are crucial in determining whether the world can forestall the looming crisis. It is imperative to place climate change mitigation at the forefront of the international trade agenda. Overall, when it comes to both trade and climate, unilateralism is counterproductive. Only through multilateral, legally compliant policy convergence can countries stave off environmental and economic collapse. ■

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