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Green Trade and China's Carbon Border Measures: Legal Compatibility with WTO Disciplines.

Dr. Syed Raza Shah Gilani¹, Dr. Ali Mohammed Al-Matrooshi², Muhammad Hamza Zakir^{3*}

¹Assistant Professor, (Law) at Abdul Wali Khan University Mardan, Pakistan. Assistant Editor. Journal of Islamic State Practices in International Law; Editor, Book Review. (BRILL) The Asian Yearbook of Human Rights and Humanitarian Law. Email: sgilani@awkum.edu.pk.

²Head of Child and Woman Protection Department- General Department Of Human Rights- Dubai Police Teacher of International Public Law- Dubai Police Academy, ORCID: 0000-0001-5954-5994, ORCID 0000-0002-7578-6808

^{3*}Visiting lecturer, Department of law, AWKUM, hamzazakirkhan@yahoo.com.

Abstract:

Since the world urgently requires action on climate change, countries are trying out new ways to lower their carbon emissions. Since China is among the biggest emitters, it has started carbon border measures to limit environmental problems during trade. But these policies cause major concerns about their agreeability with international trade rules, especially under World Trade Organization (WTO) guidelines. This work looks at how green trade and international trade law combine and how China's use of carbon border measures matches or differs from World Trade Organization rules on fairness, how countries treat outsiders and barriers to foreign trade. This study investigates how the rules and market disputes involved with trade might bring both issues and benefits to the promotion of sustainable trade across countries. When international efforts to address climate change rise, it is crucial to know about this dynamic to guide both trade and the environment.

Key Words: Green Trade, Chine Carbon Border Policies, WTO Law

Introduction

Environmental concerns and international trade are now more important than they have ever been, mainly because of global efforts to combat climate change. Increasingly, places around the globe—including the European Union—are starting to use carbon border adjustment mechanisms (CBAMs) to discourage carbon leakage and help improve world production standards. Following this, China, due to its high emitter's levels and trade position, announced its intent to develop carbon border rules in line with its overall efforts to build a green economy. (United Nations, 2015) They are born out of environmental concerns, yet these measures are debated under WTO rules, largely due to questions about the treatments of non-discrimination, transparency and necessity. This topic is important because carbon border measures are becoming necessary for countries to fulfill their promises under the Paris Agreement, but their frequent use could threaten existing rules of international trade unless properly crafted. As a big player in WTO and exporter, asking its trade policies related to the environment to meet the standards is a must for China to be accepted, defend itself against lawsuits and boost its involvement in the developing trade-environment link around the globe.

The issue this article explores is whether China's suggested carbon border measures are allowed under the rules of the WTO, specifically GATT 1994, (GATT 1994) the Agreement on Technical Barriers to Trade (TBT) and relevant decisions by the WTO dispute settlement mechanism. The worry is that while justified on environment grounds, they could be questioned as protectionist activities or contrasted with the WTO's main principles and obligations related to MFN and National Treatment. (WTO Appellate Body, 1998) To study this issue, the article applies both doctrinal and comparative strategies in law. It will first set out the foundations of carbon border measures using WTO judgments and relevant research. After that, it will take a close look at the EU's CBAM to see how it fits with WTO standards and study how China is shaping its policy rules in accordance with WTO policies and norms. (WTO Appellate Body, 2001) Ultimately, it will suggest how to design rules and laws to keep China's green trade focus aligned with its commitment to the environment and to trade with other countries

Historical Background

Trade and the environment have often clashed as questions of important concern in world economics. The General Agreement on Tariffs and Trade (GATT), set up in 1947, gave little attention to environmental matters. Efforts were mainly concentrated on eliminating trade barriers and boosting trade liberalization. In the 1990s, increasing attention worldwide on environmental problems and climate change influenced how trade policies were discussed.

The formation of the World Trade Organization (WTO) in 1995 was a step, but a calm one, towards including environmental concerns within the trade system. The Preamble of the Marrakesh Agreement which established the WTO, includes the goal of sustainable development and gives importance to the environment. (WTO Appellate Body, 2014) Besides, the WTO's TBT and SPS agreements mean that member states may adopt environmental measures, only if these measures treat everyone equally and do not really block trade.

Through WTO disputes such as US–Gasoline (1996), US–Shrimp (1998) and EC–Asbestos (2001), the justification for using Article XX to allow measures that affect trade on environmental grounds was determined. (UNFCCC, 1992)

Because of the climate crisis, governments have lately introduced tougher regulations such as emissions trading and carbon taxes. Still, as there are fears production may move to weaker climate regions, CBAMs have been developed to ensure fair pricing. (European Union, 2023) The tools put a charge on goods imported due to their carbon emissions, ensuring all producers face the same climate policies regardless of location.

EU CBAM is driving the global climate policy, as it will come into full effect in 2026. The world has paid attention to Australia's actions and prominent trading partners have discussed how they too can handle carbon border taxes. (WTO Committee on Trade and Environment, various years) What drove China's environmental policy in the past was domestic circumstances. Now, it is starting to be guided by global trade needs and international sustainability goals.

As a result of these developments, the nature and legal basis of China's carbon border rules should be thoroughly investigated and examined for their compatibility with WTO requirements.

Legal Framework and WTO Rules on Environmental Measures

Even though the World Trade Organization (WTO) does not make environmental rules, its laws include some rules and loopholes to help promote environmental protection. Most importantly for understanding WTO rules on carbon border measures are the General Agreement on Tariffs and Trade (GATT) 1994, the Agreement on Technical Barriers to Trade (TBT) and the Agreement on Subsidies and Countervailing Measures (SCM). (WTO Secretariat, 2023)

1. GATT 1994 and Article XX Exceptions

Carbon border measures could initially be regarded as breaking the fundamental standards set by GATT 1994.

- 1. Article I (Most-Favoured-Nation Treatment), aimed at preventing differences in treatment between products imported from different territories;
- 2. Equality before the law in taxation and regulations for domestic and imported like products is set out in Article III.
- 3. Article XI (Restrictions on Trade in Goods) which prohibits using most restrictions on imports and exports.
- 4. Still, there are general exceptions listed in GATT Article XX. There are two important clauses within the document.
- 5. Article XX(b) which supports actions to safeguard human, animal or plant life or health;
- 6. Article XX(g), allowing measures "relating to the conservation of exhaustible natural resources," provided they are made effective in conjunction with domestic restrictions.

For a carbon border measure to be justified under Article XX, it must pass both the specific sub-paragraph (e.g., XX(g)) and the chapeau of Article XX, which requires that the measure not be applied in a manner that constitutes "arbitrary or unjustifiable discrimination" or a "disguised restriction on international trade." WTO jurisprudence (US-Shrimp, Brazil-Retreaded Tyres) underscores that environmental aims are legitimate, but the design and application of the measure must be transparent, non-discriminatory, and reasonably connected to the policy objective.

2. The TBT Agreement

The TBT Agreement governs technical regulations, standards, and conformity assessment procedures. A carbon border mechanism may qualify as a "technical regulation" if it prescribes product-related requirements, such as reporting or pricing carbon content. (Leonelli, 2022)

Under Article 2.1, TBT prohibits discriminatory treatment of like products, while Article 2.2 requires that any technical regulation not create unnecessary obstacles to trade and be based on legitimate objectives, including the protection of the environment.

The jurisprudence in *US-Tuna II (Mexico)* clarified that regulatory distinctions based on process and production methods (PPMs) can be consistent with TBT if applied in a non-discriminatory and science-based manner. It makes it possible to set up carbon border rules using emissions levels or how products are made to tell them apart.

3. Potential Relevance of the SCM Agreement

Action by a country that includes financial help or penalties for energy exports, bypassing market guidelines, could face worries from the Agreement on Subsidies and Countervailing Measures. (Lees, Zhang, & Wu, 2025) Eligibility for discounts on carbon costs for home producers counts as a subsidy which may encourage other countries to apply countervailing duties.

4. Trade-Climate Interface in WTO Reform

The WTO reforms being discussed currently add to the challenges of making carbon border measures in line with international law. Due to a lack of clear WTO rules about trade and climate, many are now calling for changes that deal with this topic more directly. Ideas are to devise a WTO-suitable CBAM model, explain the application of Article XX more clearly and increase cooperation between the WTO and organizations like the UNFCCC.

China's Emerging Carbon Border Strategy and Its Legal Analysis

China's interest in carbon border measures is emerging at the intersection of three powerful forces: the global green transition, international trade dynamics, and domestic climate policy. While China has not formally implemented a carbon border adjustment mechanism (CBAM) akin to the European Union's, policy developments, official statements, and subnational experiments all signal a strategic shift toward evaluating such tools. (Cosbey, Droege, Fischer, & Reinaud, 2023) These steps reflect a growing awareness within China's policy and academic circles that climate goals cannot be achieved in isolation from international trade patterns and that carbon leakage and competitive fairness must be addressed to sustain long-term decarbonization.

One key driver behind China's exploration of a CBAM is the potential economic and reputational impact of foreign climate measures, particularly the EU CBAM. China is the largest exporter of many products targeted by the EU mechanism—such as steel, cement, aluminum, and fertilizers—and stands to be disproportionately affected by new carbon-related trade barriers. A 2022 report by the Chinese Academy of Social Sciences (CASS) warned that Chinese exporters could face losses of up to \$35 billion annually once the EU CBAM is fully enforced. (Liu, Wang, & Li, 2024) In response, Chinese policymakers have begun considering reciprocal or adaptive mechanisms that would either match EU pricing or penalize imports into China with high embedded carbon footprints. For example, in 2021, the Ministry of Ecology and Environment publicly criticized the EU CBAM as a potential violation of WTO rules but also acknowledged that China "needs to actively study the carbon border policies and promote fair and reasonable global climate governance." (Zhang & Wang, 2024)

Although China does not yet have a national CBAM, pilot programs and local-level experimentation are laying the groundwork. The Guangdong Emissions Trading System—one of China's most mature carbon markets—has begun incorporating carbon pricing in sectors with significant export exposure. In Guangdong's cement and petrochemical industries, local authorities have introduced emissions audits that not only fulfill domestic compliance requirements but also mirror international carbon foot printing standards, such as those used by the EU and ISO. (Zhou & Tang, 2025) These practices suggest that China is testing methodologies that could form the technical basis for a border measure in the future, ensuring alignment with both WTO obligations and foreign expectations.

Another notable development is China's push to standardize carbon labeling and product lifecycle analysis (LCA) across key industrial sectors. In 2023, the Ministry of Industry and Information Technology (MIIT) issued guidelines for calculating the full carbon footprint of steel products, which include embedded emissions from mining, production, and transportation. This move serves multiple purposes: first, it improves emissions transparency and carbon accountability within supply chains; second, it equips Chinese firms to respond to foreign CBAM-related documentation requirements; and third, it establishes a foundation for possible outbound regulation—whereby China could require foreign imports to meet the same carbon disclosure standards.

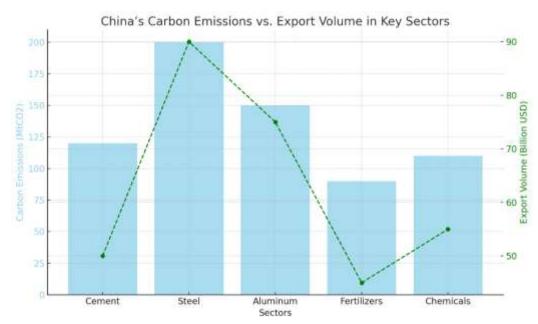
From a legal standpoint, any carbon border measure adopted by China must be carefully designed to avoid conflict with WTO rules, particularly the principles of non-discrimination and proportionality. If China were to introduce tariffs or import restrictions based solely on the country of origin, or if it were to provide exemptions to domestic firms without imposing comparable carbon costs, it could face challenges under GATT Articles I (Most-Favoured-Nation Treatment) or III (National Treatment). However, China could invoke GATT Article XX, especially paragraph (g) on the conservation of exhaustible natural resources, provided the measure is applied alongside equivalent domestic regulations and avoids unjustifiable discrimination. (Columbia Center on Sustainable Investment, 2023) For instance, if China required foreign steel imports to purchase carbon credits under a transparent, market-based system that mirrors its national ETS, and if domestic producers were subject to the same pricing scheme, the measure could be legally justifiable.

Still, legal defensibility is not enough. Perception and legitimacy matter in trade policy. If a Chinese CBAM were seen as retaliation against the EU or as a tool of industrial policy disguised as climate regulation, it could lead to political pushback and reciprocal trade measures, especially from developing countries. This is particularly sensitive given China's dual role as a global industrial power and a self-declared leader of the Global South. A Chinese CBAM that negatively impacts least developed countries (LDCs) or emerging economies could contradict its commitments under the Belt and Road Initiative (BRI) and its support for climate equity under the UNFCCC.

Therefore, a well-calibrated strategy would require China to:

- 1. Align any carbon border measure with its national ETS, ensuring domestic and foreign producers are treated comparably.
- 2. Ensure transparency in methodology, emissions tracking, and calculation of embedded carbon.
- 3. Consult and engage with key trading partners, especially those in Asia and Africa, to avoid abrupt disruptions.
- 4. Build capacity-building and transition support into the policy for less developed partners—something the EU has failed to do adequately.
- 5. Frame the policy within multilateral frameworks, such as the WTO's Trade and Environment Committee or joint climate dialogues under the UNFCCC.

Please be in mind that China's carbon border strategy remains in the formative stages, it represents a critical inflection point in how the country balances environmental ambition with trade pragmatism. With careful design, robust legal grounding, and diplomatic sensitivity, China can create a model of carbon regulation that not only meets WTO requirements but also enhances its leadership role in global climate governance.



Here's a chart that illustrates the hypothetical relationship between carbon emissions in key sectors (Cement, Steel, Aluminum, Fertilizers, and Chemicals) and their corresponding export volumes in China.

The bar chart represents the carbon emissions (in MtCO2) for each sector. The line graph tracks the export volume (in billion USD) for the same sectors.

This type of visualization can help highlight the carbon intensity of key export sectors in China and could be used to discuss how potential carbon border adjustments (like the EU's CBAM) might impact these industries.

Comparative Assessment: Lessons from the EU CBAM for China

For the first time, the European Union's Carbon Border Adjustment Mechanism implements a principle that sets a level carbon cost for all producers in its market. As Hong Kong is still working through changes, studying its design, why it was created and its current view worldwide offers China useful insights. Fundamentally, CBAM makes businesses address environmental impacts of what they produce and consume, as well as keep carbon emissions from flowing elsewhere. Despite that, the WTO system makes it very difficult for China to use supply chain tools and it is tricky for China to use these tools since both its trading partners and competitors can rely on the same methods. (TESSD, 2023)

Lawyers have worked hard to demonstrate that the CBAM sticks with the EU's obligations as members of the WTO. As a result of relying on the EU Emissions Trading System, membership in the EU offers equal rules for all materials, ensuring imports can be dealt with under Articles III and XX of GATT. Put differently, the CBAM aims to apply an EU obligation to imports from countries that do not have similar standards to ensure that EU climate policy is not weakened by imports. By using the same calculation approach and carbon pricing for every producer, the CBAM avoids direct discrimination between European and foreign companies. By including these features, the design explicitly seeks to civilize the measure against challenges at the World Trade Organization, showing a strong legal trend in relating trade to climate.

However, the CBAM has also exposed the inherent tensions between environmental unilateralism and the multilateral trading order. Critics argue that the EU's measure, while legally defensible, imposes de facto conditions on foreign producers that may not align with their development priorities or technological capacities. For example, producers in developing countries with lower historical emissions and limited decarbonization resources are disadvantaged, even if their per capita emissions remain low. This raises broader concerns about equity, historical responsibility, and the role of differentiated obligations in international environmental law—principles that are not fully integrated into the WTO framework. In this sense, the CBAM, though technically legal, is normatively controversial. (Wu & Chen, 2024) For China, these challenges are magnified. While it has made notable strides in carbon pricing through its national ETS, that system is presently limited in scope (primarily covering the power sector) and suffers from reliability and verification issues in emissions reporting. Without a mature, economy-wide carbon pricing regime, any border measure China introduces could be accused of lacking the domestic equivalence necessary for justification under WTO rules. Furthermore, if China's CBAM is perceived as targeting certain trading partners or offering exemptions for favored sectors, it risks being viewed as a disguised restriction on trade—thus failing the chapeau test under GATT Article XX.

Moreover, China occupies a unique geopolitical position: it is simultaneously the world's largest emitter and the leading exporter of carbon-intensive goods, yet it also presents itself as a representative voice of the Global South. Introducing a carbon border measure risks alienating developing countries that depend on exporting basic materials and manufactured goods to China, especially if those countries lack the institutional capacity to comply with detailed emissions verification schemes. A poorly designed Chinese CBAM could, therefore, undermine South–South trade relationships and contradict China's stated commitments to inclusive green development under initiatives like the Belt and Road Initiative (BRI).

While the EU works in a solid and stable legal setting, China's framework is more divided. Ignoring the risks of biased enforcement, secret decision making or using environmental standards to support industry is not allowed. If China uses CBAM in a way that helps its own champions or punishes imports using unclear and inconsistent rules, trading partners may retaliate and file lawsuits in international, as well as regional and bilateral, courts.

Yet, China also has ways to innovate. Rather than take a unilateral approach like European Union, China can choose a route that includes helping developing countries, aligns with efforts to slow climate change and is based on current development goals. For example, Chinese features in an evolving CBAM might cover giving out new technologies, offering extra time for the poorest nations or including an exchange of climate efforts. Using such an approach would not only improve the legal defense of Chinese trade, but also reflect China's ambition to lead in global climate governance.

Put simply, although the framework of EU CBAM provides structure, China must not simply copy these rules. Instead, the EU should deeply analyze the ways carbon border measures would affect its politics, economy and standards as part of its development, foreign policy and multilateral obligations. Creating a carbon border regime that meets WTO rules, is good for the environment and supports diplomacy will require changing how we look at trade in the time of climate transition.

Policy Recommendations for China's Emerging Carbon Border Strategy

Now, China is facing a significant moment in dealing with climate and may soon introduce carbon border measures. As the country tries to respond to carbon leakage and make trade policies accord with environmental aims, it must create a detailed, well-designed policy structure. With the connection between the environment, international agreements and politics in mind, the following proposals seek to direct China's approach to setting out a carbon border strategy accepted globally.

1. Establish a Comprehensive Domestic Carbon Pricing System

Putting a domestic carbon pricing system in place is essential for any good carbon border adjustment measure. At present, the power sector is the main area covered by China's ETS, though it ought to be improved and broadened. It is important that the system:

Bring steel, cement, aluminum and chemical production into the scope of the ETS, since they are considered most at risk of carbon leakage. These industries are especially singled out by the CBAM and similar programs.

China should either match its ETS with international carbon markets or set a single carbon price for all sectors to make carbon pricing both fair and clear. This will make China's carbon pricing equivalent to practices in other countries which will increase its standing when facing WTO disputes.

Increase the use of carbon pricing step by step, so that its implementation does not adversely affect industries and is still politically supported. During this time, you can collaborate with industries and shareholders to help them grasp what's happening and why it's essential.

Such recommendation is essential to permit China to explain border policies using carbon pricing, as this is required by WTO Article XX.

2. Design a WTO-Compliant Carbon Border Adjustment Mechanism (CBAM)

Even though the EU CBAM is helpful, the design of China's CBAM should sidestep important problems and still benefit the environment. The Chinese CBAM ought to be designed around the principles listed below.

It is necessary for the CBAM to be the same for all foreign products, to protect against claims that it violates GATT Article I (Most-Favoured-Nation Treatment). Any preference given to countries with China's bilateral or trade agreements might be seen as unfair, so it should be avoided.

Carbon border rules should use accurate and clear accounting and reporting of emissions. It is important for China to apply worldwide recognized PCF approaches to identifying the carbon content in goods that are imported. As a result, stakeholders will not disagree over how accurately emissions data is measured which was a major concern in designing the EU CBAM.

Proportionality and Necessity: The CBAM should be structured to minimize trade disruptions. It should target only those sectors most at risk of carbon leakage, and the tariffs or adjustments should be proportional to the carbon content of the imported goods. This will help satisfy the WTO requirement that trade-restrictive measures must be "necessary" to achieve environmental objectives, as outlined in GATT Article XX.

Transitional Arrangements for Developing Countries: Given China's position as a leader of the Global South, it must consider the impact of its CBAM on developing countries. China should introduce grace periods or technology transfer programs to help these countries build capacity and reduce emissions in line with global standards. This could be in the form of financial support or assistance in adopting low-carbon technologies.

3. Engage in Multilateral and Bilateral Diplomacy

For its carbon border policy to work, China must reach out to its main trading partners, especially those from developing countries and major carbon-emitting nations. Climate diplomacy should inform this engagement, making it clear that China's CBAM is part of world efforts to protect the environment, not isolated only for protectionism.

Propose trade-environment cooperation within the WTO: China should spearhead moves to organize international conversations on the topic within the WTO. Joining the WTO Trade and Environment Committee allows China to influence how these rules are created so that carbon border adjustments are both environmentally sound and just for all countries.

China should work out bilateral agreements with its leading trade partners to handle issues linked to both the environment and trade. These agreements might cover setting the same carbon prices, requiring clear emission reports and gradual changes for industries hit by carbon border policies. For instance, China can support its trading partners, especially in BRI locations, by giving them its knowledge and technologies to fight climate change.

4. Strengthen Domestic Institutional and Legal Frameworks

If China's carbon border strategy is to succeed, it requires a formal legal framework and effective local institutions to oversee emissions, check accurate calculations and maintain compliance with international trade rules. There are various actions that may strengthen China's strength inside the country.

A separate unit should be formed within China's Ministry of Commerce or Ministry of Ecology and Environment to control the implementation of carbon border measures. It would ensure that CBAM is in line with international and WTO rules and collaborate with other parts of the government to resolve troubles with measuring carbon from imports.

To help prevent conflicts at the WTO, China ought to have well-defined laws ensuring that carbon assessment is done transparently and fairly. Procedures should be provided to deal with any conflicts about carbon adjustments, either inside China or together with international agencies.

China should take part in various international bodies, like ISO and IETA, so it can help develop agreed carbon accounting and border rules at a global level. It would improve China's image and assist in forming a just and unbiased set of rules for carbon trade around the world.

5. Ensure Social and Economic Equity in the Transition

As China begins using higher carbon pricing and carbon border policies, it should make sure they have no harmful effects on the most vulnerable parts of society and the economy. All actions towards a low-carbon economy should aim to be fair to everyone, especially employees and companies in places highly dependent on industries with high emissions.

everyone, especially employees and companies in places highly dependent on industries with high emissions. China should establish support for sectors that must cut their emissions and that play a main role in certain regions. They might cover things like tax deductions for going green, granting subsidies to energy innovations and re-skilling employees. China should promote climate justice internationally by ensuring that fair treatment goes to developing countries that depend largely on exporting products linked to climate change. If China gives for support and funding for green infrastructure, these countries can reach climate objectives without facing serious economic difficulties. (Tang, Bao, Zhang, & Wang, 2013) China's approach to placing carbon tariffs could make a big difference in its climate policy, but only careful planning will make it effective. Using the information from these recommendations, China can establish a carbon border adjustment mechanism that is justifiable at home and abroad. It will help China achieve its targets for cutting emissions and be known as a global leader fighting both climate change and trade problems.

Conclusion

Because China is now considering a Carbon Border Adjustment Mechanism (CBAM), it is showing increasing interest in addressing climate change and managing its trade ties. Being the top emitter in the world and a leading manufacturing country, China has to find solutions to problems related to trade, the planet and sustainable growth. While carbon border measures are still being considered in China, they could both prevent emissions moving abroad and ensure that China's climate policies are consistent with worldwide norms for trade.

The design process, lawmaking and practical steps involved in the European Union's CBAM are all useful for China. Because the EU was first to introduce the concept of border carbon, China needs to design its own carefully to avoid risks in both legal and diplomatic areas. The CBAM being aligned with WTO rules is vital for ensuring China's policy succeeds by providing equal treatment and transparent prices for carbon. Thanks to Articles I, III and XX under the WTO rules, China can present reasons for its actions, provided they are proportionate, scientifically supported and in line with global climate efforts.

At the same moment, China should take into account how this impact could change the political and economic relationship between itself and other nations. Being a leader in global economy and an advocate for climate fairness, China is placed to form a CBAM that meets its goals in business and foreign affairs, especially with developing countries. Offering support, helping with skills and giving new technology to poorer trading partners can show how China values inclusivity and fairness in climate governance. With this approach, the credibility of CBAM will increase and it will be clear that China supports justice and sustainability. The suggestions in this article help make sure China succeeds in dealing with the legal, economic and social problems linked to a carbon border policy. By introducing its emissions trading system nationwide, informing others about its carbon accounting and cooperating globally, China can form a carbon border system that holds up in court and attracts cooperation. As well, including social justice steps for industries and workers will ensure the entire process is fair and just. Because China is now considering a Carbon Border Adjustment Mechanism (CBAM), it is showing increasing interest in addressing climate change and managing its trade ties. Being the top emitter in the world and a leading manufacturing country, China has to find solutions to problems related to trade, the planet and sustainable growth. While carbon border measures are still being considered in China, they could both prevent emissions moving abroad and ensure that China's climate policies are consistent with worldwide norms for trade.

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problems linked to a carbon border policy. By introducing its emissions trading system nationwide, informing others about its carbon accounting and cooperating globally, China can form a carbon border system that holds up in court and attracts cooperation. As well, including social justice steps for industries and workers will ensure the entire process is fair and just. All told, the process will be complicated, but China's approach towards carbon border adjustments shows great potential. Thanks to its rise as a global powerhouse in manufacturing and action on climate, China can lead the creation of a WTO-friendly carbon border mechanism, meeting its climate goals at home and increasing it role in global climate change leadership. Not only is this shift important for China's environmental future, but it also gives a chance to impact worldwide trade as the world changes.

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