Title: How trade policy can support the climate agenda

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One Sentence Summary:

Ensure open markets for clean technologies and products

Main Text:

Economic analysis has produced ample insights on how international trade and climate policy interact (1). Trade presents both opportunities and obstacles, and invites the question of how domestic climate policies can be effective in a global economy integrated through international trade. Particularly problematic is the potential relocation of production to regions with low climate standards. Measures to level the playing field, such as border carbon adjustments (BCAs), may be justified for specific emissions-intensive and trade-exposed sectors but need to be well-targeted, carefully navigating tensions that can arise between the desire to respect global trade rules and the need to elaborate and implement effective national climate policies. The conformity of specific trade measures with international trade and climate change law is not entirely clear. Yet, clarity is needed to ensure that the industry actors affected will find the rules predictable and be able to adhere to them.

On the one hand, international trade can reduce emissions by providing incentives for countries with technological know-how to specialize in the production of clean goods and services, and countries with high renewable-energy potential to specialize in the clean production of energy-intensive goods. It can also accelerate the transfer and diffusion of clean technologies. Economic integration can enhance resilience to climate change by allowing regions affected by extreme weather to procure goods from unaffected trade partners (2), thus reducing price swings. It can also promote adaptation to slow-onset events by shifting production of affected sectors to regions experiencing lower climate-related productivity losses or even productivity gains.

On the other hand, current trade policies do not provide incentives for trade in clean products. For reasons unrelated to climate policy, they instead favor carbon-intensive imports. Raw materials and industries producing intermediate goods are the highest emitters of CO2 per unit of value added. Yet, they face much lower tariffs and nontariff barriers (NTBs) compared to more complex products with lower carbon intensities, mainly because of counterlobbying by

downstream industries. This bias has been shown to be equivalent to a negative carbon price of about US$90 per tonne of CO2 on average (3)—the opposite of what a climate-supportive trade regime would require.

Differences in climate change mitigation costs across world regions could be decisive for the implementation of effective climate policies. Emissions resulting from the crossborder transport of goods are on average modest relative to emissions resulting from production. But carbon leakage through relocation of production from high- to low-regulation jurisdictions would be problematic. The mere anticipation of this type of carbon leakage could render ambitious emission targets politically difficult, if unmatched by other countries. Without clear and obvious benefits for the climate, governments will not be willing to sacrifice the competitiveness of key industries and jobs.

Yet the risk of trade-driven carbon leakage across the whole economy is generally found to be limited. Because of frictions to trade and because energy often constitutes a small share of overall costs, most industries would need very high carbon prices to justify relocation. Thus, leakage should not be used as a pretext to avoid ambitious climate policy or protect domestic industry from imports as it does not substantially compromise the possibility of unilaterally reducing global emissions (4).

CLUBS AND ADJUSTMENTS

The current debate on trade and climate change mainly revolves around border carbon adjustments. Recently, the European Commission laid out a proposal for a BCA that would impose the carbon costs borne by European Union (EU) producers on imports from countries with less stringent climate policies. The proposal is designed to levy the carbon price prevailing in the EU Emissions Trading System on imports of iron and steel products, fertilizers, aluminum, cement, and electricity (5). Export rebates, which could help domestic industries compete on a level playing field on the world market but which might violate international trade rules (6), are not part of the EU proposal. Canada and the United Kingdom are actively considering BCA regimes. Likewise, legislators in the United States have proposed border measures adjusting for differences in the costs of environmental regulation, not only carbon pricing.

The rules of the World Trade Organization (WTO) have received criticism for constraining the design of BCA schemes. Nevertheless, adhering to this set of rules facilitates conducting economic transactions across national boundaries. Countries will hence need to carefully navigate the tensions that can arise between the desire to respect global trade rules and the need to elaborate and implement effective national climate policies.

In addition to leveling the playing field, BCAs could constitute an important strategic instrument to deter free-riders who do not contribute to the global public good of climate change mitigation (7). Current efforts to reduce dependence on fossil fuel imports could increase political support for BCAs against exporters of fossil fuels and energy-intensive products. Yet, BCAs might put a substantial burden on other, especially low-income countries. Such inequitable outcomes would go against the United Nations Framework Convention on Climate Change (UNFCCC) principle of “common but differentiated responsibilities and respective capabilities.” Political tensions and retaliation by trade partners would result in high economic costs and might also sour international relations to a degree that makes it harder to achieve progress in international

climate cooperation. For instance, the European Commission expects that implementation of the proposed BCA will trigger a response by trade partners but remains agnostic as to the nature of this response.

BCAs could also be considered by a club of like-minded countries to confer favorable market access on members of the club, but trade barriers for those outside of it. The German G7 Presidency has vowed to advance the formation of a climate club of countries with comparable climate policies. Jointly adopted harmonized BCAs or other trade restrictions could be a key element of a climate club (8). Harmonizing climate-related trade measures across countries with very different economic situations and climate policy ambitions, however, faces severe limitations. First, as WTO rules demand that foreign producers are not treated less favorably than domestic ones, the carbon price applied to imports cannot exceed the domestic carbon price level. As current carbon prices in, say, the EU and China differ by about a factor of 10, a common BCA in both jurisdictions would need to be set at no more than the Chinese level, which would be insufficient to protect EU producers from carbon leakage.

Second, US participation in a climate club is especially important, because the US constitutes the world's largest economy and second largest emitter. However, adopting a carbon price in the US faces major political and legal obstacles. Owing to the legal provisions of the WTO, BCAs can only adjust for policies that put a price on carbon emissions, but not for the costs of other types of regulation, such as renewable portfolio standards. The possibility for a WTO-consistent BCA thus seems unlikely in the US. Third, very different approaches to carbon pricing in different countries—for instance, regarding covered sectors, the instrument used (carbon tax or emission trading), and whether domestic carbon prices are reimbursed to exporters— would further complicate cross-country harmonization of BCAs (9).

MAKING TRADE WORK FOR CLIMATE

BCAs are unlikely to provide sufficient incentives for joining a climate club, except for those few countries with substantial export shares in the sectors to be covered by a BCA. BCAs will thus have limited potential to force trade partners to adopt climate measures. In addition to the "stick" of a BCA, a climate club also needs "carrots" to make club membership attractive. A balanced mix of BCAs as enablers for ambitious national climate policies and positive incentives to ramp up climate action could help harmonize the trade and climate agendas.

A diplomatic BCA agenda

BCAs can ease opposition against climate policy from domestic industries at risk of carbon leakage. Any BCA should, however, be designed in a way that is least trade-restrictive to trade partners that are subject to this policy. The WTO rules generally favor open communication and multilateral efforts to reach negotiated solutions prior to the adoption of unilateral trade measures. Thus, international coordination helps align national climate policies with the WTO regime (10).

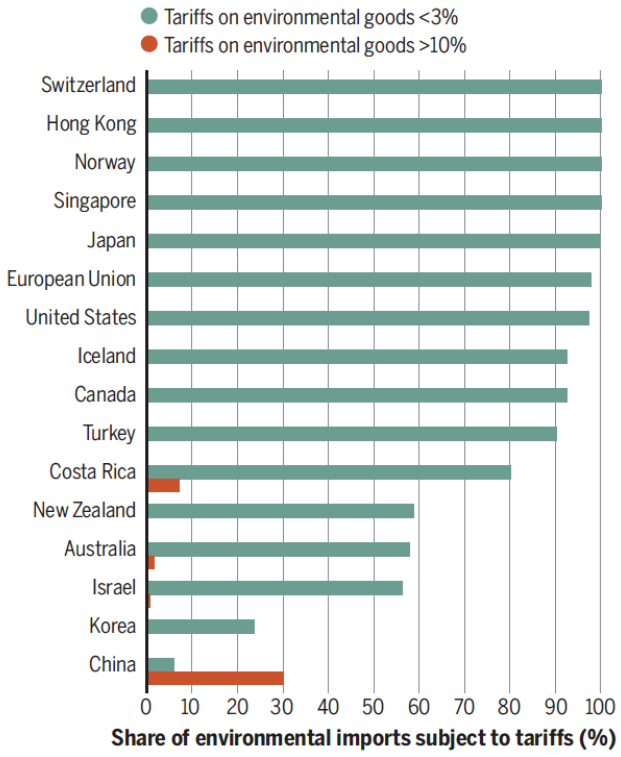

Figure 1 - ***Barriers to trade of clean technologies*** *- Imports of environmental goods and services are subject to trade barriers in many nations. Some major economies apply tariffs of less than 3% (green bars) on almost all imports of environmental goods. For others, however, a substantial fraction of such imports is subject to tariffs of more than 3% and in some cases even more than 10% (orange bars) (14).*

Trade policies adopted for environmental reasons can be compatible with the WTO's nondiscrimination principles under certain strict requirements. Even if a BCA violates the WTO's nondiscrimination rules, it can qualify for an exemption depending, in part, on whether countries engage in good faith efforts with their trade partners before adopting a BCA. Countries need to show that unilateral action was necessary or a last resort after having attempted to coordinate with trading partners. Consultations under the UNFCCC or WTO umbrella, as well as bilateral efforts, may satisfy this requirement. The WTO agreements also contain numerous transparency provisions with which a BCA regime needs to comply. This is particularly the case with respect to the purpose, the data used for calculations of the BCA, default values, exemptions and revenue use, and the review and phase-out criteria of the BCA. BCAs have so far not been tested before the WTO dispute settlement mechanism. Prior diplomatic efforts, even-handed application, and transparent administration could substantially increase the chances of a BCA regime to survive WTO scrutiny.

Use the WTO regime to reform and phase out fossil fuel subsidies

In 2020, global fossil fuel subsidies of US$351 billion constituted an important barrier for climate change mitigation (11). The WTO is in a good position to help promote fossil fuel subsidy reform. Given the trade effects of such subsidies, and following the example of ongoing talks on fisheries subsidies, the WTO's extensive rules on subsidies can help tackle fossil fuel subsidies, even though the WTO's dispute settlement system is currently not fully functional. Specifically, the WTO can strengthen transparency through improved notification by its

members, counternotification by other members, and by addressing fossil fuel subsidy reform in the Trade Policy Review Mechanism, a system under which WTO members peer-review their trade policies.

New rules—which could consist of an amendment of the Agreement on Subsidies and Countervailing Measures (ASCM) or a stand-alone agreement modeled after the proposed agreement on fisheries subsidies— could define a new category of prohibited subsidies. This may be limited to a subset of fossil fuel subsidies based on their trade and/or environmental effects and take into account the challenges faced by developing countries in subsidy reform (12). As changing (or agreeing to new) multilateral rules is challenging, progressive member states could push ahead with a plurilateral agreement, as some are doing in the context of the Agreement on Climate Change, Trade and Sustainability being negotiated by New Zealand, Costa Rica, Fiji, Iceland, Norway, and Switzerland.

Clear rules for settlement of disputes on renewable energy technologies

Lower trade barriers for climate-friendly goods decrease mitigation costs and could facilitate the achievement of more ambitious climate targets. As the international trade regime requires nondiscriminatory treatment of foreign products and producers, it also has the potential to accelerate the diffusion of clean energy technologies. A case in point is the successful legal challenges that have been raised against local content requirements in renewable energy support schemes. Such discriminatory tools require sourcing a certain share of value added from domestic producers, thereby favoring the latter over foreign firms and hampering global competition in the renewable energy sector, which may raise the costs of emission reductions. At the same time, such arrangements can also help establish competitive innovation capabilities and increase support for climate policies by domestic interest groups. Current geopolitical tensions and the concern about depending on imports of critical materials from authoritarian regimes could result in increased adoption of local content requirement schemes.

Temporary and adaptable local content requirements subject to regular assessment cycles might constitute a compromise between open markets for clean technologies and policy space for climate measures appropriate for the respective national context. To make the trade regime work for the climate, it will require a clear set of criteria to assess the compatibility of domestic support schemes for clean technologies with WTO principles. Gaps can be identified in other areas that hinder the expansion of trade in renewable energy and green technologies. Examples include the lack of exceptions for climate friendly subsidies under the ASCM, and the insufficiency of international trade rules to limit trade barriers for green technologies. Addressing such shortcomings through reform of the relevant WTO rules would be highly beneficial for trade in renewable energy and other climate-friendly technologies (13).

Expand efforts to achieve an agreement on environmental goods and services

The agenda to lower trade barriers for clean energy technologies should focus on tariff reductions for environmental goods, which are often still subject to high tariffs (see the figure) adopted to protect domestic industries from foreign competition. Environmental goods on average face higher trade barriers than less complex but more carbon-intensive products.

Negotiations on reducing tariffs on environmental goods have floundered for two decades, even though tariffs were already low among countries engaging in negotiations toward an Environmental Goods Agreement. Many are small "nuisance tariffs" (<3%) that could easily be removed to jump-start the process for such an agreement (14). This effort could be extended to higher tariffs and a longer list of goods that would include Environmentally Preferable Products. These include products that have been produced with lower environmental impacts than their conventional counterparts, such as organic food or sustainably grown timber products.

Packaging and labeling requirements or technical standards and norms can impose substantial NTBs for trade in environmental goods. NTBs related to labor market regulations, such as visa and work permit requirements, may hamper trade in environmental services—for instance, for the sustainable management of energy, water, and forest resources. Therefore, NTBs, which are difficult to detect and sometimes protectionist in intent, should be included in the agenda for mutual recognition.

Explore the potential of green materials clubs

Conditioning technology transfers to abatement efforts may strengthen incentives to join a climate club. A club of like-minded countries could go beyond imposing BCAs on nonmembers and also consider broader cooperation by implementing common green industrial policies, such as low-carbon requirements for climate-intensive globally traded basic materials, such as iron, steel, aluminum, cement, or fertilizers (15). The activities of a green materials club should start at relatively low ambition by developing long-term deep decarbonization visions or roadmaps for energy-intensive industries. In a second step, dedicated support for research, development, and diffusion of technologies and infrastructure planning can be applied in a harmonized manner by club members. More research is needed to gain a more comprehensive understanding of how technologies and policies can be adapted to specific country contexts.

The carrot for joining such a club, and thus adopting green industrial policies, would be getting access to future niche markets for green basic materials, in addition to avoiding (or at least reducing) the stick of BCAs. A green materials club could take on the form of a plurilateral agreement by a subset of early movers under the WTO. Coordinated efforts by a coalition of countries that are leaders in clean technologies would help establish such a green materials club. This would create a critical mass of participants to render the benefits of club membership attractive.

UNEXPLOITED POTENTIAL

Global trade has often been portrayed as an obstacle for climate policy, as it enables firms to move to export from regions with less ambitious environmental regulations. Such relocation of carbon-intensive production can be addressed by BCAs. Trade restrictions, however, can also bring along protectionist elements and only provide limited incentives for other countries to ramp up their climate ambition. BCAs need to be designed carefully according to clear and transparent rules in close dialogue with key trade partners to prevent political tensions that could imperil the entire climate agenda far beyond trade-related issues.

Trade policies supporting the climate agenda will need to pay particular attention to climate impacts on trade and the implications of climate-friendly trade for low-income countries. To

support them, trade finance, investment, and aid for trade should be scaled up in areas related to climate change mitigation and adaptation, and additional research will be required to inform policy design.

Beyond unilateral policy approaches that include BCAs, the WTO regime offers a series of options to make the trade regime work for the climate. Unfortunately, up to now, this potential has not been exploited by WTO member states. The options discussed above will face substantial political obstacles. Yet growing awareness of the urgency to transform the global economy toward climate neutrality could give new impetus for restructuring the trade regime in a way that supports climate goals.

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References:

1) J. R. Markusen, J. Int. Econ. 5, 15 (1975).
2) M. Stevanović et al., Sci. Adv. 2, e1501452 (2016).
3) J. S. Shapiro, Q. J. Econ. 136, 831 (2021).
4) J. Caron, "Empirical evidence and projections of carbon leakage: Some, but not too much, probably" in Handbook on Trade Policy and Climate Change, M. Jakob, Ed. (Edward Elgar, 2022) .
5) European Commission, Proposal for a regulation of The European Parliament and of The Council establishing a carbon border adjustment mechanism (2021).
6) C. Böhringer, C. Fischer, K. E. Rosendahl, T. F. Rutherford, Nat. Clim. Chang. 12, 22 (2022).
7) C. Coons, S. Peters, FAIR Transition and Competition Act of 2021: Protecting jobs, building resilience, and raising international climate ambition (2021).
8) W. Nordhaus, Am. Econ. Rev. 105, 1339 (2015).
9) S. Tagliapietra, G. B. Wolff, Nature 591, 526 (2021).
10) S. Droege, M. Panezi, "How to Design Border Carbon Adjustments" in Handbook on Trade Policy and Climate Change, M. Jakob, Ed. (Edward Elgar, 2022).
11) OECD & IEA, "Energy price surge underlines need to accelerate clean energy transitions rather than subsidise fossil fuels"; https://www.oecd.org/newsroom/energy-price-surge-underlines-need-to-accelerateclean-energy-transitions-rather-than-subsidise-fossilfuels.htm (2021).
12) H. van Asselt, T. Moerenhout, C. Verkuijl, "Using the Trade Regime to Phase out Fossil Fuel Subsidies" in Handbook on Trade Policy and Climate Change, M. Jakob, Ed. (Edward Elgar, 2022) .
13) A. Monti, "International Trade Disputes on Renewable Energy" in Handbook on Trade Policy and Climate Change, M. Jakob, Ed. (Edward Elgar, 2022).
14) J. de Melo, J.-M. Solleder, "Towards An Environmental Goods Agreement Style (EGAST) agenda to improve the regime complex for Climate Change" in Handbook on Trade Policy and Climate Change, M. Jakob, Ed. (Edward Elgar, 2022).

15) M. Åhman, M. Arens, V. Vogl, “International cooperation for decarbonizing energy intensive industries – The case for a Green Materials Club” in Handbook on Trade Policy and Climate Change, M. Jakob, Ed. (Edward Elgar, 2022).