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Toward a Green and Just Transition

A NEW FRAMEWORK FOR TRADE AND INVESTMENT RULES AND CLIMATE ACTION

RACHEL THRASHER AND YUDONG LIU

EXECUTIVE SUMMARY

Given the real environmental and economic impacts of climate change, especially for developing countries, global institutions and national governments have begun to respond to the challenge with climate finance and policy. Despite these efforts, a significant financing and policy gap remains between the status quo and achieving shared climate goals – a gap that is further complicated by the constraints of the international trade and investment regime.

What reforms to the global trade and investment rules are needed to put the global economy on an ambitious course toward a green and just transition? What policies and safeguards are needed to ensure that developing countries can ramp up industrialization, with limited environmental impact and without fear of international legal challenges? How can spillover effects be minimized, particularly on developing countries, without sacrificing swift, bold climate action?

In November 2022, the Boston University Global Development Policy Center hosted a workshop to develop a research agenda for evaluating the progress and addressing the pitfalls of ensuring the trade and investment regime is compatible with achieving global climate goals and development.

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Drawing from presentations and discussions among experts in trade and climate at the workshop, this policy brief reflects three major conclusions:

1. The global green industrial revolution requires a **new, inclusive framework for economic change**, focused on building capacity sustainably for developing countries.
2. To combat climate change, the world needs **rapid, diverse and experimental climate action by all nations**, regardless of development or income level, that **aligns with principles of climate justice** to protect against negative spillovers.
3. A key component of the climate action required is **a reformed trade and investment regime** that removes obstacles to climate action and facilitates economic restructuring toward a low-carbon economy.

Even effective climate policy may have negative spillovers for vulnerable populations and countries. As such, an inclusive framework for economic change will need to account for possible spillover effects and allow developing countries access to finance and policy space to facilitate economic restructuring. Given this, the brief posits how, with the existence of new data, researchers may be able to better understand how trade and investment rules intersect with the climate crisis and what it would take to align those rules with inclusive development and climate priorities, especially for developing countries. We put forward two key buckets of potential research questions:

1. **To what extent do trade and investment treaties have direct and indirect effects on climate?** Trade and investment treaties may have direct impacts on climate through increasing or changing the composition of economic activity. They may also shape domestic policies aimed at shifting to renewable energy, decreasing emissions, and adapting to the new demands of a warmer climate.
2. **To what extent are changing climate priorities shaping new trade and investment rules or the way that countries relate to those rules?** As global climate priorities shift, trade and investment treaty language may be changing to adapt to the new global consensus. Countries may also seek to withdraw from certain treaties while negotiating new types of agreements with climate change at the center.

Any new framework for economic change must be quick and decisive, as well as inclusive. Already, the trade and investment rules are presenting tremendous legal challenges which must be addressed to preserve policy space. The status quo is antithetical to a sustainable, just and inclusive future. Bold research and even bolder policymaking are needed to reshape what that future looks like.

INTRODUCTION

The very real threat posed by climate change is no longer in doubt. Research suggests that even a 1C increase in average temperature across the globe will have large projected economic impacts – concentrated in areas of the world where most of the global population lives (IMF WEO 2017). Other estimates show that, over the past 20 years, the Vulnerable Twenty (V20) Group of Finance Ministers of the Climate Vulnerable Forum, a dedicated coalition of 68 member countries that are systemically vulnerable to climate change, have lost out on 20 percent of their growth potential as a result of the negative physical impacts of climate change (V20 2022).

In response, national governments are taking large-scale action to combat climate change through emissions reductions and efforts to shift to a low-carbon economy. New initiatives at the International Monetary Fund (IMF) and the World Bank are underway to incorporate climate considerations in their financing arrangements (Task Force on Climate, Development and the IMF 2023, Gallagher

& Bhandary 2023). There is increasing pressure among World Trade Organization (WTO) members to reform the trade regime to align with climate commitments (WTO 2022, Hale & Mbeva 2023), and the European Union (EU) and the Organisation for Economic Cooperation and Development (OECD) are undergoing similar efforts to align their investment treaty commitments with global climate goals (Gaukrodger 2023, Schaugg, Bernasconi-Osterwalder & Nikièma 2023).

Nevertheless, existing policy and financing action at the national and international level is far from sufficient to limit global warming (Black et al 2021). Experts agree that substantial investment and subsequent economic growth for most of the world will be needed to meet climate goals, as well as the UN 2030 Sustainable Development Goals, with predictions pointing to at least $1 trillion per year needed in domestic financing from emerging markets and developing countries (EMDEs) by 2025 (Songwe, Stern & Bhattacharya 2022). Moreover, domestic financing alone is still not sufficient, as researchers have estimated an additional $1 trillion per year needed in external finance by 2030 – from developed country pledges, development banks and private lenders and investors (Songwe, Stern & Bhattacharya 2022).

The current calculations around climate finance demonstrate a pathway forward, a necessary (though not sufficient) condition for a successful global response to climate change. Where countries can mobilize the necessary amount of financing ($1 trillion per year), and it is accompanied by additional necessary policy shifts toward a low-carbon future, the possibility arises that countries could "decouple" their economic growth from increased emissions. In other words, countries may be able to shift the composition of their planned policies and investment for economic growth such that they meet the dual purpose of development and accomplishing a clean energy transition (Songwe, Stern & Bhattacharya 2022).

The same countries for whom sustainable long-term growth will rely on this "decoupling" effect are also the most vulnerable to climate change impacts and the most exposed to economic impacts of climate policy in high-income countries. On the other hand, they also have the most room to grow in the new, low-carbon global economy. Developing countries are keen to not be left behind in the green industrial revolution and are already taking steps toward a low-carbon transition and a net zero economy.

A major obstacle that many of these countries face, however, are the international trade and investment rules embodied in the WTO agreements, as well as hundreds of free trade agreements (FTAs) and thousands of international investment agreements (IIAs). Although intended to encourage and promote increased flows of trade and investment, which often drive economic growth, they also constrain policymakers in their use of policy tools to harness trade and investment for strategic growth. Specifically, these rules make it harder for countries to build up upstream and downstream industries through local content requirements, or to prioritize diffusion of essential climate technologies through changes to domestic intellectual property laws.

In November 2022, the Boston University Global Development Policy Center hosted a workshop to develop a research agenda for evaluating the progress and addressing the pitfalls of ensuring the trade and investment regime is compatible with achieving global climate goals and development. Drawing from presentations and discussions among experts in trade and climate at the workshop, this policy brief reflects three major conclusions:

1. The global green industrial revolution requires a **new, inclusive framework for economic change**, focused on building capacity sustainably for developing countries.
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A NEW INCLUSIVE FRAMEWORK FOR ECONOMIC CHANGE

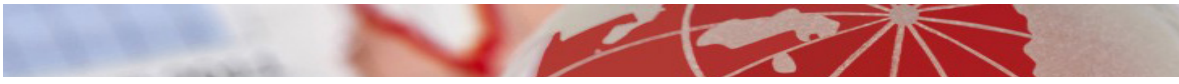
The climate crisis has acted as a catalyst for a new industrial revolution that is poised to shift economic activity towards low-carbon alternatives. Many countries have already begun, and all will need to engage in economic restructuring. At the same time, each country's transition will be unique and will require a mix of different policies. A typology developed by Gallagher and Bhandary (2023) identifies five types of countries that will interact with this system:

1. States that are at the early stages of industrial development ("first movers").
2. States that have access to the critical raw materials and the industries to make use of them ("new winners").
3. States that are currently contributing massive amounts to global emissions ("large emitters").
4. States whose economy is dependent on fossil fuel exports ("fossil fuel extractors").
5. States who are particularly vulnerable to the physical impacts of climate change ("climate vulnerable economies").

Of course, these categories are not mutually exclusive. A country may be both a "first mover," as well as "climate vulnerable," or a "new winner" but still battling the challenges of being a "large emitter." Each country-type will need to deploy policies that play to its strengths and accommodate weaknesses. For example, countries rich in critical raw materials (CRMs) for the energy transition ("new winners") will need to develop a new industrial sector and supply chains, and increase public and private investment in those sectors.[1] Countries whose economies have been dependent on fossil fuel exports or high-carbon industrial activities ("large emitters" and "fossil fuel extractors") will face the additional political challenge of shifting public and private investment away from sectors that provide a bulk of their tax revenue and jobs. Other countries must somehow build new industries from the ground up ("first movers") with few capital resources while managing the physical devastations that come with climate change vulnerability (Gallagher & Bhandary 2023).

Bangladesh, a least developed country (LDC), for example, experiences outsized exposure to large-scale weather events, as well as hunger and malnutrition in its population. To avoid being left behind, some researchers have suggested that it introduce its own carbon taxes, while also lobbying high-income countries for support in capacity building and adopting new technologies (Khatun 2022). This may have initial regressive effects, however, and companion policies will be needed to protect the most vulnerable to increased energy costs (Khatun 2022; Steckel et al. 2021). India, by contrast, has already begun to introduce its own suite of energy transition policies (Green Hydrogen Mission, National Solar Mission, E-mobility policy and the Offshore Wind Policy), and adopted ambitious climate targets toward relying on renewable energy and reaching net zero by 2070. To mitigate carbon emissions embedded in its entrenched coal sector, however, the country also has a keen interest in carbon capture, utilization and storage (CCUS) technology, though the scalability of such is not yet proven (Rohit et al. 2017; Kumar 2022). South Africa plays a significant role in the climate transition as a regional leader and as a major source of CRMs - manganese and copper - in its own right (National Business Initiative 2021). Like India, it has demonstrated a proactive role toward climate

[1] Indonesia provides an important example of this, when in January 2020, the government banned the export of Nickel Ore so as to develop domestic nickel processing capacity (IEA 2022).



action, but faces huge challenges in supporting economic restructuring throughout the continent (Climate Action Tracker 2022; Winning and Richardson 2021; Ismail 2022).

Despite having diverse geographical, human capital and economic characteristics, developing countries also have a set of shared priorities (e.g., Mbeva et al. 2023):

1. To make real contributions to global climate goals by undergoing an energy and industrial transition toward a low-carbon economy;
2. To continue progress in economic growth and diversification; and
3. To catch up with developed countries, decreasing inequality gaps in the global economy.

If developing countries wait for the developed countries to "go first" in climate policy, they will not only fail to contribute to climate goals, but they will threaten progress toward the other two priorities as well. Their more carbon-intensive exports could lose access to the biggest markets and decrease in global market share overall. If market share continues to decrease, developing countries could ultimately be left behind in the new industrial revolution or even lose what progress they have already made, leading to deindustrialization.

A new framework for global economic change will account for the shared priorities amidst the different economic and political realities of each country. For developing countries, pursuing shared priorities according to each country's unique characteristics could empower both individuals and policymakers to see the opportunities in this new industrial revolution and consequently set economic and political priorities for that transition. Climate vulnerable countries, for example, will likely prioritize adaptation measures to meet the needs of their populations (Deere-Birkbeck 2022). Countries rich in CRMs will decide how to balance the economic and global environmental interest in exploiting new natural resources with the societal and local environmental interests in protecting carbon sinks and biodiversity (Ismail 2022). Overall, developing countries will be able to decide how to leverage the new global supply chains toward economic diversification and growth.

The framework also allows developed countries to see developing countries as partners in this global project, rather than 'rogue states' that must be brought into line. In accordance with that, any changes to the global legal architecture will need to make space for a diverse range of country economic transitions and be adaptable to changing conditions (Deere-Birkbeck 2022). To set the stage, countries will need to set a priority for transparency and dialogue, as well as cooperation to form a common agenda for trade rule reform among developing countries. Dialogue may happen in the context of the WTO, or in negotiating fora where countries are able to prioritize their climate goals more clearly - such as the United Nations Framework Convention on Climate Change (UNFCCC) or the Group of 20 (G20) (Kumar 2022; Deere-Birkbeck 2022). Now that there is a global consensus on the true threat of climate change, the real work can begin to remove legal obstacles to, and exploit new opportunities for, aggressive climate action globally.

RAPID, DIVERSE AND EXPERIMENTAL CLIMATE ACTION BY ALL NATIONS

To meet the current Paris Agreement goal to cut emissions such that the global warming effect is kept below 1.5C (above pre-industrial temperatures), governments have begun rapid climate policymaking to shape public and private economic activity. Global climate commitments can help hold them accountable and keep them motivated. The pathway, however, is riddled with economic, legal and political potholes.

National climate action takes many forms and is growing in popularity (Higham 2022). Some policies involve standard-setting regulations for private actors, others shift incentives in favor of climate-friendly economic activity, while still others involve direct investment by state actors into strategic sectors (Higham 2022).[2] The two most common policy approaches discussed in the literature are market-based carbon-pricing mechanisms and green industrial policy (both sectoral and economy-wide).

National carbon pricing mechanisms are widely touted as the most "comprehensive and cost-effective" policies, especially if they involve coordinated action among many countries and have a targeted redistribution component (Cosbey 2022, Cosbey et al. 2019, Buchs et al. 2021, Green 2021).[3] For example, widespread adoption of carbon pricing – through large-scale carbon "clubs" of like-minded countries with border carbon adjustments (Farrokhi & Lashkaripour 2021) have been modeled to reduce emissions quite effectively by cutting down carbon leakage (Nordhaus 2021, Cosby et al. 2021). Other research has demonstrated that national redistribution policies aimed at groups most affected by price increases resulting from carbon pricing can lead to even further emissions reduction (Buchs et al. 2021).

Green industrial policy, on the other hand, generally involves more direct action by governments to "influenc[e] how we create value – what goods (and services) we produce and how we produce them" (Estevez & Palladino 2022). Some countries have taken a narrow sectoral approach, as with the renewable energy support policies introduced in Canada, India, the United States and many European countries. Countries have also begun to take economy-wide action, as the US has with the Inflation Reduction Act (IRA), which attempts to directly influence a wide range of sectors to meet national energy and emissions goals. Indeed, countries all over the world are turning toward industrial policy as the tool of choice for meeting climate goals and commitments (Siripurapu & Berman 2022).

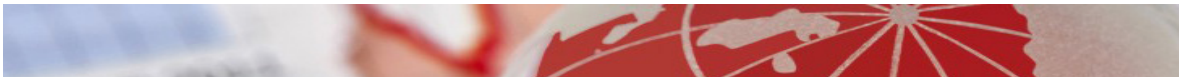
In some instances, countries have deployed trade barriers as a sort of protectionist industrial policy aimed at building up domestic industries in the new clean energy technologies (Qi 2022). Certain trade protection mechanisms, like local content requirements, may aid in building backward and forward linkages in the broader economy. However, the success of these measures depends heavily on the position that country holds in the global value chain, as well as its comparative advantage in producing upstream and downstream components (Qi 2022).

While it is important that climate policies contribute to mitigating the climate crisis and enabling countries to adapt to the changing climate, quantifying the individual effectiveness of one particular policy or another may not be that important. Well-accepted economic modeling shows that taxing an economic activity will cause that activity to decrease and that lowering trade barriers leads to increased quantities of those goods being traded (e.g., Goodwin et al. 2019). Another wealth of literature points to the effectiveness of industrial policies generally in restructuring economies and prompting growth in targeted sectors (e.g., Chang 2002; Heilmann 2008; Aiginger & Rodrik 2020).

Indeed, several *ex ante* studies of the effectiveness of a diverse set of climate policies demonstrate that most of them are predicted to have at least moderate impacts on emissions reductions (Higham & Koehl 2022; Peñasco, Anadón & Verdolini 2021). *Ex post* studies, however, are sparse, in part because of the current "lack of carbon pricing at levels (or timescales)" that would have real-world

[2] A wealth of literature has demonstrated that this diverse approach to policy experimentation has been quite successful in achieving targeted economic outcomes historically. See, e.g., Heilmann 2008, Harvard Growth Lab 2023.

[3] Global climate finance commitments often play a role in shaping those domestic climate policies. Simultaneously, domestic climate priorities and goals shape global climate commitments. The exact mechanisms by which those things happen are complex, and outside of the exact scope of this policy brief. However, global commitments to climate finance are extremely important and should be tailored to provide adequate resources for developing country governments to mitigate and adapt to climate change, as noted (Songwe, Stern & Bhattacharya 2022).



impacts (Cosbey 2022). As one study showed, although climate policymaking is rapidly ramping up, it still falls short of "the pledges made in the [nationally determined contributions] and from enabling global warming to be limited to below [1.5C]" (Koehl & Higham 2022). The World Bank State and Trends of Carbon Pricing 2023 report indicates that, while governments are engaging in increasing carbon pricing, the world needs "big advances both in terms of coverage and price" (World Bank 2023). In other words, although it is too soon to measure real-world impacts, there is room for much more aggressive climate action both in number and scale of policies.

Nevertheless, the costs of these policies are not insignificant. Public finance will need to increase by $1 trillion to $2 trillion per year to meet global climate goals, in addition to the $1 trillion in external financing (Songwe, Stern & Bhattacharya 2022). At the same time, in a scenario where aggressive policies are not deployed and global warming reaches 3C, the costs to global growth are estimated to be $178 trillion by 2070 (Deloitte 2022).

Beyond Climate Action: Guardrails and Social Policies to Protect Against Negative Spillovers

Despite the actual and growing potential for climate policies to (at least) encourage emissions reductions, studies have demonstrated that some climate policies have the potential for significant negative spillover effects. For countries like India and South Africa, heavily reliant on fossil fuel exports, a rapid shift away from those imports in high-income countries will put enormous strain on their respective economies. As a countermeasure, they have started building up new industries around their CRMs and renewable energy sources, but have faced legal opposition to those efforts (see, e.g., *India-Solar*).

Border carbon adjustments like the EU's Carbon Border Adjustment Mechanism (CBAM) present a further challenge to developing countries whose exports are relatively high in carbon content. Researchers have predicted that the EU CBAM will "decrease global real income by $3.4 billion." Moreover, the income changes will be inequitable "with developed countries' incomes rising by $2.5 billion while developing countries' incomes fall by $5.9 billion" (Banga 2022). Another study estimates that, under the EU CBAM, welfare gains for developed countries could be as much as $11 billion, while developing countries decrease in welfare by as much as $9 billion (He et al. 2022).[4] Beyond the EU CBAM, simple net-zero policy approaches implemented by high-income countries have been shown to substantially decreased the fiscal space and increase the debt burden for developing countries due to the large changes in global demand for their fossil fuel products and high dependence on that revenue (Titelman et al. 2022). Moreover, as developed countries seek to expand production of batteries for clean energy, a surging demand for CRMs may result in an unstable commodity boom with macroeconomic effects in developing countries with those natural resources, not to mention social and environmental deterioration (Seefeldt 2020).

Some studies further show that national carbon-centric approaches, like carbon pricing, may disproportionately impact lower-income communities within countries (Healy 2022). An econometric study of the income impacts of carbon pricing shows that, in addition to general price inflation, it could have a regressive effect within certain countries depending on their energy use pattern, putting more financial pressure on poorer households. Even if the impact is reversed, poorer households will experience increased energy costs (Steckel et al. 2021).[5] If climate policies lead to increased inequality, they could undermine the very climate goals they seek to reach. In particular, as more vulnerable

[4] At least one researcher has pointed out that the design of the EU CBAM, which includes competitiveness and industrial objectives, may actually undermine its climate effectiveness (Espa 2022).

[5] The possibility of using carbon pricing revenues to compensate the communities that lose out on economic benefits is one advantage of such an approach (Steckel et al 2021). This is studied more fully in Buchs et al., 2021.

populations grow increasingly exposed to economic challenges stemming from climate action by developed countries, public support for climate policy will likely weaken (Green and Healy 2022).

Most studies on the economic impacts of climate policies on developing countries have focused on carbon pricing and border carbon adjustments. Their conclusions often emphasize the need for companion policies that would redistribute the income from a carbon tax or tariff toward people that are hit hardest by inflation or high fuel prices (e.g., Steckel et al. 2021; Buchs et al. 2021). For policies that result in cross-border economic impacts, experts have suggested that developing countries lobby the policymaking government to receive shared proceeds of the revenue to support local green transitions (Cosbey 2022). Revenue redistribution may not be enough, however. Given that citizens generally demonstrate a low public trust in a government's ability to redistribute wealth when they first see and experience increased taxes, higher prices and lost jobs, climate policy focused on equitable outcomes might be better addressed *ex ante* (Estevez 2022).

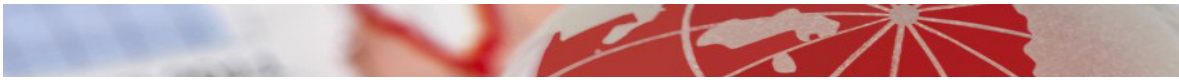
Green industrial policies, even those taking a more whole-economy approach, may also result in increased inequality if they are simply layered on decades of corporate decision-making that prioritizes shareholder value. Policy "guardrails" such as windfall taxes, equity standards and targeted public investment will not only limit corporate capture but also increase the overall impact of these policies (Estevez & Palladino 2022). Another approach, seeking a whole economy "Green New Deal," would introduce a wide variety of policy components: social provisioning, power reconfiguring, financial stability and security, macroeconomic institutional support and foreign policy, as well as carbon pricing or taxation (Green & Healy 2022). Combined and implemented well, these policy ingredients could mitigate negative spillover effects of a purely price-base or tax-based approach. However, there are additional obstacles that face many countries, in the form of international trade and investment treaties.

A REFORMED TRADE AND INVESTMENT REGIME: SHIFTING THE GLOBAL ECONOMY AND REMOVING OBSTACLES TO CLIMATE ACTION

More climate action, in both quantity and diversity, is necessary. A key component of that action requires reforming the international trade and investment regime to remove legal risks associated with climate policy and support restructuring to low-carbon economies.

Trade

Global trade rules have a fraught history with environmental impacts and environmental regulation (e.g., *US-Tuna*, *US-Shrimp*). Trade rules like those found in the WTO's General Agreement on Tariffs and Trade (GATT) and the several hundred free trade agreements (FTAs) signed by countries around the world are premised on a preference for decreasing barriers to trade. By doing so, the treaties seek to promote global growth and development by increasing trade. Concomitantly, increased trade has come strongly correlated with increased carbon emissions (Peters & Herwich 2008). Still, there is theoretical support for the presence of an Environmental Kuznets Curve, wherein countries may reach a point at which their economic activity results in fewer negative environmental impacts, including carbon emissions (Grossman & Krueger 1995). Trade has been shown to have a trifold effect on the environment generally – by scale (*how many* products are traded), composition (*what kinds* of products are traded) and technique (*how* those products are produced and traded) (Tsurumi & Managi 2010). Increased trade necessarily increases the scale effect of environmental impact, but both the composition and technique effects could have positive or negative impacts depending on the products and countries involved.



The process by which the composition and technique effects outpace the scale effect of trade on the environment is related to the possibility of decoupling economic growth from increasing emissions – an area of research that is relatively new and a high priority for developing countries, but also comes with a high price tag (Wang & Xu 2023). Some positive evidence of decoupling has been found so far in the highest income countries (Karmellos et al. 2021; Tenaw & Hawitibo 2021; Pilatowska & Wlodarczyk 2018; Clement 2018; Dent 2022; Chatterjee 2023). Other research, however, confirms on-going correlation between economic growth and CO_2 emissions, especially for low- and middle-income countries where the scale effective of economic growth on the environment dominates (Stern 2017). It is evident that the increased trade (and strongly increased investment, as indicated previously) will need to be accompanied by policies that direct economic activity into strategic sectors to facilitate a just energy transition according to each country's specific economic characteristics.

Under those circumstances, however, global trade rules pose an additional obstacle to climate action. Since the early 2010s, WTO trade rules have been invoked several times to challenge national climate policies (e.g., *Canada-FIT*, *India-Solar*, *US-Renewables*). The policies challenged in those cases are called local or domestic content requirements, and almost every country in the world has deployed them at some point to facilitate strategic economic restructuring (Chang 2002; Aiginger & Rodrik 2020). Nevertheless, they are also prohibited under WTO and FTA rules as a violation of general non-discrimination principles and specific rules identifying those policies. The WTO's Agreement on Subsidies and Countervailing Measures (SCM) and Agreement on Trade-Related Investment Measures (TRIMs) have effectively removed local content and export performance requirements from country policy toolkits.

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), along with parallel-but-ratcheted-up (TRIPS-plus) rules in FTAs outside of the WTO, are well known for their role in limiting access to new technology in the medicines context (Tenni et al. 2022) and could conceivably have a similar impact on access to essential climate technologies, like renewable energy production and generation, adaptation technologies and (eventually) CCUS (Kumar 2022). Given these possibilities, some experts are especially concerned that trade rules may disproportionately impact developing countries. By limiting key industrial policy tools used to restructure their economies (in other words, to change the *composition* of their economic activity), and gain access to new climate technologies (in other words, to change the *techniques* involved in their economic activity), WTO and FTA trade rules could resign developing countries to only experiencing the scale effect of increased trade and investment, making decoupling between trade and emissions all the more difficult (Kumar 2022).

Nevertheless, there are some areas where trade rules, if reformed and harnessed carefully to make space for the priorities and needs of developing countries, may have the potential to play a supporting role in shifting or restructuring the global economy. This may happen by way of a few mechanisms, including:

1. Disciplining current subsidies given to high emitting industries and especially the fossil fuel industry;
2. Liberalizing trade in low-carbon goods ("green" or "clean" products) to increase the quantity traded; or
3. Lending enforcement tools to climate commitments by incorporating commitments into new trade agreements.

Global trade rules already place limits on subsidies that have a large distortionary trade impact or discriminate against trade partners. Nevertheless, almost all countries have relied on subsidies historically to support the energy sector in the name of energy security (De Bievre, Espa & Polletti

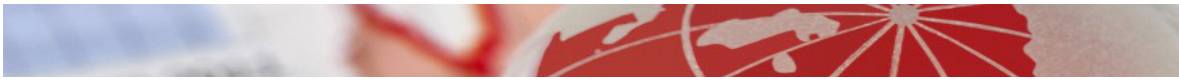
2017). Estimates vary wildly, but the International Energy Agency calculated that global fossil fuel consumption subsidies amounted to $1 trillion in 2022 (IEA 2023). In recent years, countries have begun to focus more support on their renewable energy sectors (Evenett 2019; Hoekman & Nelson 2020; Higham 2022). Scholarly recommendations to bring subsidies in line with climate goals have proposed various ways to place more limits on support programs with negative climate impacts – effectively making it easier to support the renewable energy sector and harder to support fossil fuels (Cosbey & Mavroidis 2014, Hildreth 2014, Wold 2012). However, countries must reform subsidies carefully, taking into consideration the risk of energy poverty for the poorest communities of the world (see, Steckel et al. 2021; Green & Healy 2022). Shifting subsidies toward renewable energy support, therefore, must be paired with enforceable commitments to protect vulnerable communities from deepening energy poverty.

A second mechanism through which trade rules might complement climate policy is targeted liberalization of "green" traded products. Historical research on the relationship between trade and environment has shown a positive correlation between increased trade quantities and increased emissions (Peters & Hertwich 2008). Recent research, however, has argued that countries could reduce global emissions by anywhere from around 1 to 3.6 percentage points with negligible economic cost by equalizing tariffs and non-tariff barriers on dirty and clean industries. (Shapiro 2020). This is before considering the further step of 'reversing' this bias – raising tariffs on high-carbon products and lowering them on "cleaner" goods. One obstacle to this mechanism is the difficulty countries have faced so far in defining "green" or "clean" goods, especially in a way that does not automatically disadvantage developing countries, which do not have access to the most up-to-date technologies (De Melo & Solleder 2022). Another obstacle is one that has already been mentioned: increasing barriers to trade (i.e., tariffs) above the current levels would also likely violate countries' commitments at the WTO and other trade agreements. The legality of carbon border adjustments has not yet been adjudicated but is likely to be reviewed soon by the WTO's Dispute Settlement Body.

It is important, however, to point out what has already been shown – that such policies on their own are likely to have negative welfare impacts on developing countries – both because of the potential hit to tax revenue with the demand for lower tariffs on higher technology goods that most developing countries import (Banga 2022), and because of the new market access limitations their domestically produced goods will face. The resultant growth in inequality between countries would need to be addressed. Moreover, research has found that it is important to accompany increased imports of "green" products or climate-positive technologies with additional domestic renewable energy policies to encourage the deployment of those technologies and consumption of those products (Qi 2022).

A third mechanism by which trade agreements may support climate goals is through lending enforcement power to climate commitments. Increasingly, new FTAs are incorporating a diverse set of climate provisions (Morin & Jinnah 2018; Leal-Arcas et al. 2020). The research is still quite young, but there are studies exploring whether climate provisions in FTAs might be correlated with decreased emissions, with early positive results (Morin & Jinnah 2018; Leal-Arcas et al. 2020; Chatterjee 2023). However, the process of treaty reform is not a fast one (Van Asselt 2022), and many treaties may not be worth the risk.

In general, the trading regime has been established to prioritize liberalized trade over strategic trade protection for industrial development. As mentioned, this means that the tools deployed by many countries to build sectoral linkages in the economy and kick off strategic growth have been shown to be effective *and* to violate global trade rules (Chang 2002; Thrasher 2021; Aiginger & Rodrik 2022). If the trade rules simply maintain the status quo in this regard, many developing countries will resist climate friendly reforms as they will find it difficult to capitalize on their comparative advantage in the new supply chains and therefore will not experience a short- or medium-term benefit for their populations.



Investment

Unlike the mixture of constraints and opportunities found within the trade regime, the consensus regarding the balance of risks and benefits of staying with IIAs has become increasingly clear. Research by the Boston University Global Development Policy Center has shown countries face a risk of up to $340 billion in possible investor-state dispute settlements (ISDS) to fossil fuel firms if they take the aggressive climate action needed to reach the 1.5C goal, including canceling oil and gas projects under development and ending all licensing for new production concessions (Tienhaara et al. 2022a). These calculations do not cover upstream and midstream energy projects or assets, nor do they include potential losses in the coal sector. Additionally, a substantial proportion of the legal and financial risk will be borne by a handful of developing countries - such that their limited fiscal resource could be spent on paying awards to fossil fuel firms rather than closing the investment gap with domestic support for their own mitigation and adaptation efforts (Tienhaara et al 2022b). Even if investor-state dispute cases do not materialize, many scholars have voiced concern about the chance of regulatory chill, in which the threat of ISDS makes countries skittish about taking climate action (Tienhaara 2018, Moehlecke 2020, Berge & Berger 2021).

A growing number of EU countries have begun to argue that the Energy Charter Treaty (ECT), a sector-specific IIA for the energy sector, is simply not aligned with the bloc's climate commitments and must be discarded (European Parliament 2022). As of July 2023, the EU Commission has officially proposed that the bloc withdraw wholesale from the treaty (Abnett 2023).[6] OECD members, likewise, have started asking how to take a different approach to lower their risk of investor-state disputes. Some have proposed a protective carve out for climate policy, or in the alternative, a carve out that eliminates protection for fossil fuel investors (Lee 2023; Mbengue 2023; Gaukrodger 2023). While not everyone has concluded that all investment treaties must go, many experts across international organizations, national governments and academic institutions are questioning whether they are fit for the purpose of managing the global energy transition (Lee 2023; Johnson 2023).

The obstacles to climate action are clear - and exacerbated further for low-income countries with high levels of inequality and high climate vulnerability. To the extent that trade and investment treaties present additional obstacles to climate policymaking, they must be reformed and aligned with the new framework for economic change or removed in favor of new priorities.

CONCLUSION: OPPORTUNITIES AND RESEARCH GAPS

To support best practices in climate policymaking and trade and investment treaty negotiating, the trade and climate research community must seek to understand the complex relationships between countries at different income levels, between different sectors in the global and national economies and between trade rules and climate action. Fortunately, due to several novel sources of data, there are new opportunities to fill research gaps and provide evidence-based policy recommendations to policymakers.

The Climate Change Laws of the World and the Global Trade Alert databases both provide helpful insights into the climate action taking place at national levels (Grantham & LSE 2023; GTA 2023). The Climate Change Laws of the World focuses on legislation identified through its aim to mitigate or adapt to climate change. The Global Trade Alert identifies legislation by its sectoral trade impacts. In both cases, data can identify what countries are doing to address climate change and allow

[6] At the time of this writing, the EU Commission has formally proposed a coordinated withdrawal from the ECT. For this to take effect, a qualified majority of EU members must agree to the decision and the EU Parliament must be in support. On its face, it seems that a qualified majority of EU members are already on board individually, but the official vote to withdraw as a bloc has not yet occurred (Schaugg, Bernasconi-Osterwalder & Nikièma 2023).

researchers to evaluate correlations between climate policymaking and real-world environmental and economic impacts. The Climate Change Litigation database provides an important insight into how private and public actors are attempting to enforce, as well as resist, national climate policies (Sabin Center 2023). Existing databases that map investment treaty language across the thousands of treaties in existence can provide another useful tool to explore the specific legal constraints countries may face (UNCTAD 2023; Alschner 2021).

Drawing from these resources, the trade and climate research community will be able to:

- Gather more data on emissions, environmental quality, economic growth and inequality as they correlate with climate policies in different contexts.
- Continue tracking the new climate-related language in FTAs and IIAs, as well as other new-form economic agreements like Indo-Pacific Economic Framework and the Agreement on Climate Change, Trade and Sustainability.
- Map climate policies (country-by-country or globally) onto specific country treaty commitments and common treaty provisions to understand more comprehensively the international legal constraints on those policies.

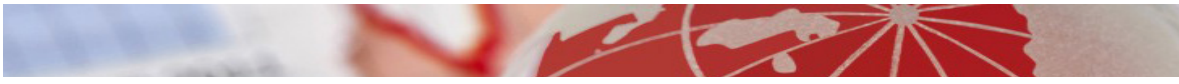
Beyond these resources, many unanswered research questions remain. Some questions are set up to explore the impact of trade and investment treaties on climate outcomes and climate policymaking, while others explore the reverse impact – climate priorities' impact on trade and investment treaties. Some illustrative research questions are below:

To what extent do trade and investment treaties have direct and indirect effects on climate?

- To what extent does trade liberalization (or economic growth) (in clean/green sectors) correlate with decreased emissions – or what models of predicted trade liberalization or economic growth could correlate with decreased emissions?
- To what extent do trade and investment treaty rules put constraints on common climate mitigation or adaptation policies?
- To what extent do trade and investment treaties put constraints on common companion policies (those which are not directly related to climate but seek to put guardrails on climate-friendly policies and investment)?
- To what extent have countries faced legal challenges (or what new legal challenges have they faced) as a result of climate and climate-adjacent policymaking?
- To what extent have countries sought to shape their climate policy to conform within actual or perceived treaty constraints (case studies)?

To what extent are changing climate priorities shaping new trade and investment rules or the way that countries relate to those rules?

- To what extent are new trade and investment agreements increasing in climate language?
- To what extent are new trade and investment agreements increasing in enforceable climate commitments (e.g., updating Morin and Jinnah 2018)?
- To what extent are developing countries seeking new trade and investment treaties to expand their export markets in new transition materials (new commodities)?
- What other treaty terms are changing in response to shifting priorities (e.g., sectoral specific liberalization in transition materials, or investment in new supply chains)?



The new framework for economic change works at two angles - to change how developing country governments view their role in the global economic transition and to change how developed countries view their own policies and the policies of developing countries in the same context. Under this new framework, the global community must act, but it will look different for different states, depending on their specific characteristics. Action, moreover, must be quick and decisive, as well as inclusive - acknowledging impacts across the whole economy and seeking to mitigate losses for the most vulnerable populations. The trade and investment regime presents tremendous legal challenges which must be addressed to preserve policy space for diverse and inclusive climate action.

The status quo is antithetical to a sustainable, just and inclusive future. Bold research and even bolder policymaking are needed to reshape what that future looks like.

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REFERENCES

Abnett, Kate. "EU proposes Energy Charter Treaty exist after climate concerns." *Reuters*. https://www.reuters.com/sustainability/climate-energy/eu-proposes-energy-charter-treaty-exit-after-climate-concerns-2023-07-07/.

Aiginger K. and Dani Rodrik. "Rebirth of Industrial Policy and an Agenda for the Twenty-First Century." *Journal of Industry, Competition and Trade*. 2020. https://drodrik.scholar.harvard.edu/publications/rebirth-industrial-policy-and-agenda-21st-century.

Alschner, Wolfgang, Elsig, Manfred and Polanco, Rodrigo (2021), *"Introducing the Electronic Database of Investment Treaties (EDIT): The Genesis of a New Database and Its Use"*, World Trade Review, Vol. 20 (1), pp. 73-94, DOI: https://doi.org/10.1017/S147474562000035X Published online by Cambridge University Press: 13 August 2020.

Alvi, S., Ahmad, I. & Rehman, A. Trade of environmental versus non-environmental goods and carbon emissions in high and middle–income countries. *Environ Sci Pollut Res* 30, 65283–65295 (2023). https://doi.org/10.1007/s11356-023-26972-9

Aronoff, Kate, Alyssa Battistoni, Daniel Aldana Cohen, and Thea Riofrancos. *A Planet to Win: Why We Need a Green New Deal*. London etc.: Verso, 2019.

Banga, Rashmi. "Trade and Environment: Can International Trading Rules Help?" *Development* 65, no. 1 (2022): 10–13. https://doi.org/10.1057/s41301-022-00332-5.

Berge, Tarald Laudal, and Axel Berger. "Do Investor-State Dispute Settlement Cases Influence Domestic Environmental Regulation? The Role of Respondent State Bureaucratic Capacity." *Journal of International Dispute Settlement* 12, no. 1 (March 2021): 1–41. https://doi.org/10.1093/jnlids/idaa027.

Black, S., Parry, I., Roaf, J., Zhunussova, K. (2021) Not yet on track to net zero: the urgent need for greater ambition and policy action to achieve Paris temperature goals. IMF Staff Climate Note no. 2021/005.

Büchs, Milena, Diana Ivanova, and Sylke V Schnepf. "Fairness, Effectiveness, and Needs Satisfaction: New Options for Designing Climate Policies." *Environmental Research Letters*, 124026, 16, no. 12 (November 23, 2021). https://doi.org/10.1088/1748-9326/ac2cb1.

Canada - Measures Relating to the Feed-in Tariff Program (*Canada-FIT*). *Report of the Appellate Body*, WT/DS412/AB/R (May 2013). https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds426_e.htm.

Chang, Ha Joon. *Kicking Away the Ladder: Development Strategy in Historical Perspective* (London, Anthem Press, 2002).

Chatterjee, Sanchita. "Trade, Global Value Chains and Climate Action in the CPTPP." *Journal of Asia Pacific Studies* 7, no. 122 (2023): 53–68. https://www.researchgate.net/publication/369362043_Trade_Global_Value_Chains_and_Climate_Action_in_the_CPTPP.

Climate Action Tracker. "South Africa." 2022. https://climateactiontracker.org/countries/south-africa/policies-action/.

Cosby, Aaron. "Trade-Related Impacts of HIC Climate Policies: The Development Angle." Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.

Cosbey, Aaron, Susanne Droege, Carolyn Fischer, and Clayton Munnings. "Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs From the Literature." *Review of Environmental Economics and Policy* 13, no. 1 (2019): 3–22. https://doi.org/10.1093/reep/rey020.

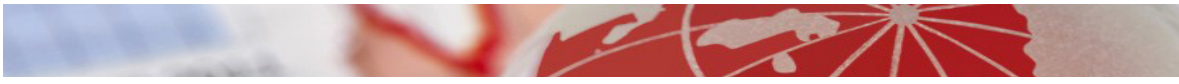
Cosbey, Aaron, Tim Gore, Eline Blot, Tancrede Voituriez, Laura Kelly, and Jodie Keane. Issue brief. *What Can Least Developed Countries and Other Climate Vulnerable Countries Expect from The EU Carbon Border Adjustment Mechanism (CBAM)?* Institute for European Environmental Policy, June 25, 2021. https://ieep.eu/wp-content/uploads/2022/12/What-can-climate-vulnerable-countries-expect-from-the-EU-CBAM-IEEP-et-al-briefing-002.pdf.

Cosbey, Aaron, and Petros C. Mavroidis. "A Turquoise Mess: Green Subsidies, Blue Industrial Policy and Renewable Energy: The Case for Redrafting the Subsidies Agreement of the WTO." *Journal of International Economic Law* 17, no. 1 (March 2014): 11–47. https://doi.org/10.1093/jiel/jgu003.

De Bièvre, Dirk, Ilaria Espa, and Arlo Poletti. "No Iceberg in Sight: On the Absence of WTO Disputes Challenging Fossil Fuel Subsidies." *International Environmental Agreements: Politics, Law and Economics* 17, no. 3 (June 2017): 411–25. https://doi.org/10.1007/s10784-017-9362-0.

Deere-Birkbeck, Carolyn. Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.

Deloitte (2022). The turning point: A Global Summary. https://www.deloitte.com/content/dam/assets-shared/legacy/docs/gx-global-turning-point-report.pdf.



De Melo, Jamie & Jean-Marc Solleder. 2021. "Towards an Environmental Goods Agreement STyle (EGAST) agenda to improve the reigme complex for Climate Change." *Fondation Pour Les* Études *Et Recherches Sur Le Développement International*, Development Policies Working Paper no. 287. https://hal.science/hal-03201725/document.

Dent, Christopher M. "Neoliberal Environmentalism, Climate Interventionism and the Trade-Climate Nexus." *Sustainability*, vol. 14, no. 23 (2022). https://doi.org/10.3390/su142315804.

Espa, Ilaria. "Reconciling the Climate/Industrial Interplay of CBAMs: What Role for the WTO?" *Symposium on Carbon Border Adjustments* (2022). Doi:10.1017/aju.2022.31.

Estevez, Isabel. Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.

Estevez, Isabel, and Lenore Palladino. Issue brief. *The Need for Corporate Guardrails in US Industrial Policy*. The Roosevelt Institute, August 18, 2022. https://rooseveltinstitute.org/wp-content/uploads/2022/08/RI_CorporateGuardrailsInUSIndustrialPolicy_IssueBrief_202208.pdf.

European Parliament. "Joint Motion for a Resolution on the outcome of the modernisation of the Energy Charter Treaty." RC-B9-0498/2022 (Nov. 2022). https://www.europarl.europa.eu/doceo/document/RC-9-2022-0498_EN.html.

Evenett, Simon J. "Protectionism, State Discrimination, and International Business since the Onset of the Global Financial Crisis." *Journal of International Business Policy* 2 (March 2019): 9–36. https://doi.org/10.1057/s42214-019-00021-0.

Farrokhi, Farid, and Ahmad Lashkaripour. Working paper. *Can Trade Policy Mitigate Climate Change?*, September 2021. https://alashkar.pages.iu.edu/FL2021_Climate_Policy.pdf.

Fremstad, Anders, and Mark Paul. "Neoliberalism and Climate Change: How the Free-Market Myth Has Prevented Climate Action." *Ecological Economics*, 107353, 197 (July 2022). https://doi.org/10.1016/j.ecolecon.2022.107353.

Gallagher, Kevin P. and Rishikesh Ram Bhandary. "World Bank Evolution As If Development and Climate Change Really Mattered: Four Foundations for Successful Reform." *Global Economic Governance Initiative Policy Brief* (March 2023). https://www.bu.edu/gdp/files/2023/03/GEGI_PB_023_KG-WB-Reform-FIN.pdf.

Gaukrodger, David. "The Climate Crisis and Climate Commitments Relevant to Investment Policy." In *Investment Treaties, the Paris Agreement and Net Zero: Towards Alignment* (April 11, 2023). https://www.oecd-events.org/investment-treaty-conference/session/d14121a4-dc41-4b12-98e0-f621bb67b9b8/the-climate-crisis-and-climate-commitments-relevant-to-investment-policy.

Goodwin, Neva, Jonathan M. Harris, Julie A. Nelson, Pratistha Joshi Rajkarnikar, Brian Roach, and Mariano Torras. *Microeconomics in Context*, 4th ed. (New York, Routledge, 2019).

Grantham Research Institute on Climate Change and the Environment and London School of Economics (Grantham & LSE). "Climate Change Laws of the World." 2023. https://climate-laws.org/.

Global Trade Alert (GTA). "Independent Monitoring of Policies that Affect World Commerce." 2023. https://www.globaltradealert.org/.

Green, Fergus, and Noel Healy. "How Inequality Fuels Climate Change: The Climate Case for a Green New Deal." *One Earth* 5, no. 6 (June 17, 2022): 635–49. https://doi.org/10.1016/j.oneear.2022.05.005.

Green, Jessica F. "Does Carbon Pricing Reduce Emissions? A Review of Ex-Post Analyses." *Environmental Research Letters*, 043004, 16, no. 4 (March 24, 2021). https://doi.org/10.1088/1748-9326/abdae9.

Grossman, Gene M., and Alan B. Krueger. "Economic Growth and the Environment." *The Quarterly Journal of Economics*, vol. 110, no. 2, 1995, pp. 353–77. *JSTOR*, https://doi.org/10.2307/2118443. Accessed 17 July 2023.

Hale, Thomas and Kennedy Mbeva (2023). "Paradigm Shift: A New Era for Trade, Sustainability, and Development." White Paper, Remaking the Global Trading System for a Sustainable Future Project. https://remakingtradeproject.org/white-papers.

Harvard Growth Lab (2023). Growth Diagnostics. https://growthlab.cid.harvard.edu/policy-area/growth-diagnostics.

He, Xiaobei, Zhai Fan, and Ma Jun. "The Global Impact of a Carbon Border Adjustment Mechanism: A Quantitative Assessment." Task Force on Climate, Development and the International Monetary Fund (March 2022). https://www.bu.edu/gdp/2022/03/11/the-global-impact-of-a-carbon-border-adjustment-mechanism-a-quantitative-assessment/

Healy, Noel. "Green New Deal Policy Paradigm: Good Policy and Good Politics." Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.

Heilmann, S. Policy Experimentation in China's Economic Rise. *St Comp Int Dev* 43, 1–26 (2008). https://doi.org/10.1007/s12116-007-9014-4.

Higham, Catherine. Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.

Hildreth , Virginia R. "Renewable Energy Subsidies and the GATT." *Chicago Journal of International Law* 14, no. 2 (2014): 702–29.

Hoekman, Bernard, and Douglas Nelson. "Rethinking International Subsidy Rules." *The World Economy* 43, no. 12 (December 2020): 3104–32. https://doi.org/10.1111/twec.13022.

India - Certain Measures Relating to Solar Cells and Solar Modules (*India-Solar*). *Report of the Appellate Body*, WT/DS456/AB/R (Sept. 2016). https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds456_e.htm.

International Energy Agency (IEA). "Fossil Fuels Consumption Subsidies 2022." Policy Report (Feb. 2023). https://www.iea.org/reports/fossil-fuels-consumption-subsidies-2022.

IEA. "Prohibition of the Export of Nickel Ore." IEA (2022). https://www.iea.org/policies/16084-prohibition-of-the-export-of-nickel-ore.

International Monetary Fund (IMF) (2017). World Economic Outlook (WEO), "Seeking Sustainable Growth: Short-Term Recovery, Long-Term Challenges. https://www.imf.org/en/Publications/WEO/Issues/2017/09/19/world-economic-outlook-october-2017.

Ismail, Faizel. "Panel 4: Policy Discussion and Next Steps." Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.

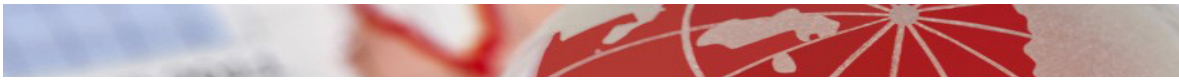
Johnson, Lise. "The Climate Crisis and Climate Commitments Relevant to Investment Policy." In *Investment Treaties, the Paris Agreement and Net Zero: Towards Alignment* (April 11, 2023). https://www.oecd-events.org/investment-treaty-conference/session/d14121a4-dc41-4b12-98e0-f621bb67b9b8/the-climate-crisis-and-climate-commitments-relevant-to-investment-policy.

Karmellos, Marios, V. Kosmadakis, Petros Dimas, A Tsakanikas, Nestor Fylaktos, Constantinos Taliotis, Theodoros Zachariadis. "A decomposition and decoupling analysis of carbon dioxide emissions from electricity generation: Evidence from the EU-27 and the UK." Energy, vol. 231 (Sept 2021). DOI:10.1016/j.energy.2021.120861

Khatun, Fahmida. "What Climate Policy Could Look Like: Developing Country Perspectives." Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.

Koehl, Arnaud & Catherine Higham. "What Is Climate Change Legislation?" Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, October 4, 2022. https://www.lse.ac.uk/granthaminstitute/explainers/what-is-climate-change-legislation/.

Kumar, Nagesh. Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.



Leal-Arcas, Rafael, Marek Anderle, Filipa da Santos, Luuk Uilenbroek, and Hannah Schragmann. "The Contribution of Free Trade Agreements and Bilateral Investment Treaties to a Sustainable Future." *Zeitschrift für Europarechtliche Studien* 23, no. 1 (2020): 3–76. https://doi.org/10.5771/1435-439x-2020-1-3.

Lee, Eunjung. "Debating Immediate Actions: Cutting Back the Promotion of Fossil Fuel Investment." In *Investment Treaties, the Paris Agreement and Net Zero: Towards Alignment* (April 11, 2023). https://www.oecd-events.org/investment-treaty-conference/session/f042f0b8-7a79-457f-8b98-e636df4c785e/debating-immediate-action-cutting-back-the-promotion-of-fossil-fuel-investment-.

Mbengue, Makane Moise. "The Climate Crisis and Climate Commitments Relevant to Investment Policy." In *Investment Treaties, the Paris Agreement and Net Zero: Towards Alignment* (April 11, 2023). https://www.oecd-events.org/investment-treaty-conference/session/d14121a4-dc41-4b12-98e0-f621bb67b9b8/the-climate-crisis-and-climate-commitments-relevant-to-investment-policy.

Mbeva, Kennedy, Reuben Makomere, Joanes Atela, Victoria Chengo, Charles Tonui. Africa's Right to Development in a Climate-Constrained World (Switzerland, Springer Nature, 2023).

Moehlecke, Carolina. "The Chilling Effect of International Investment Disputes: Limited Challenges to State Sovereignty." *International Studies Quarterly* 64, no. 1 (March 2020): 1–12. https://doi.org/10.1093/isq/sqz077.

Mori Clement, Yadiri Isbi. "Coping with climate change: fair burden sharing among industrialized and developing countries." Student Paper, Karl Franzens, University of Graz (2018). https://renati.sunedu.gob.pe/bitstream/sunedu/952121/1/Mori_Clement_YI_D.pdf.

Morin, Jean-Frédéric, and Sikina Jinnah. "The Untapped Potential of Preferential Trade Agreements for Climate Governance." *Environmental Politics* 27, no. 3 (2018): 541–65. https://doi.org/10.1080/09644016.2017.1421399.

National Business Initiative. "Decarbonising the South African Mining Sector." Chapter 4 in *Just Transition and Climate Pathways Study for South Africa*. https://web-assets.bcg.com/4b/37/dd0ea8d-34946816c195123e806b6/nbi-chapter-4-decarbonising-the-south-african-mining-sector.pdf

Nordhaus, William. "Dynamic Climate Clubs: On the Effectiveness of Incentives in Global Climate Agreements." *Proceedings of the National Academy of Sciences* 118, no. 45 (October 5, 2021). https://doi.org/10.1073/pnas.2109988118.

Peñasco, Cristina, Laura Díaz Anadón, and Elena Verdolini. "Systematic Review of the Outcomes and Trade-Offs of Ten Types of Decarbonization Policy Instruments." *Nature Climate Change* 11, no. 3 (January 18, 2021): 257–65. https://doi.org/10.1038/s41558-020-00971-x.

Peters, Glen P. and Edgar G. Hertwich. "CO2 Embodied in International Trade with Implications for Global Climate Policy." *Environmental Science and Technology*, vol. 42, no. 5 (2008). DOI: 10.1021/es072023k.

Pilatowska, Mariola and Aneta Wlodarczyk. "Decoupling Economic Growth From Carbon Dioxide Emissions in the EU Countries." Montenegrin Journal of Economics, vol. 14, issue 1 (2018). http://repec.mnje.com/mje/2018/v14-n01/mje_2018_v14-n01-a11.pdf

Qi Qi. "The Impact of US/EU Tariffs on Solar Power Deployment in Developing Countries." Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022b.

Rohit, Amit Kumar, Ksh. Priyalakshmi Devi, and Saroj Rangnekar. "An overview of energy storage and its importance in Indian renewable energy sector: Part I – Technologies and Comparison." *Journal of Energy Storage*, vol. 13 (2017). https://doi.org/10.1016/j.est.2017.06.005.

Sabin Center for Climate Change Law. "Climate Change Litigation Databases." 2023. http://climatecasechart.com/.

Schaugg, Lukas, Nathalie Bernasconi-Osterwalder & Suzy Nikièma (2023). "United We Leave or Divided We Stay? Why it's time for the EU to speak with one voice regarding the Energy Charter Treaty." International Institute for Sustainable Development Deep Dive. https://www.iisd.org/articles/deep-dive/united-we-leave-divided-we-stay-energy-charter-treaty.

Setzer, Joana and Higham, Catherine. *Global trends in climate change litigation: 2022 snapshot*. Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science, June 2022. https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2022/08/Global-trends-in-climate-change-litigation-2022-snapshot.pdf

Seefeldt, Jennapher Lunde (2020). "Lessons for the Lithium Triangle: Considering Policy Explanations for the Variation in Lithium Industry Development in the "Lithium Triangle" Countries of Chile, Argentina and Bolivia." *Politics & Policy*, vol. 43(4). https://onlinelibrary.wiley.com/doi/pdf/10.1111/polp.12365

Shapiro, Joseph S. "The Environmental Bias of Trade Policy." *The Quarterly Journal of Economics* 136, no. 2 (May 2021): 831–86. https://doi.org/10.1093/qje/qjaa042.

Siripurapu, Anshu and Noah Berman. 2022. "Is Industrial Policy Making a Comeback?" *Council on Foreign Relations*. https://www.cfr.org/backgrounder/industrial-policy-making-comeback.

Songwe, V., Stern, N., Bhattacharya. (2022) Finance for climate action: scaling up investment for climate and development. https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2022/11/IHLEG-Finance-for-Climate-Action-1.pdf.

Steckel, Jan C., Ira I. Dorband, Lorenzo Montrone, Hauke Ward, Leonard Missbach, Fabian Hafner, Michael Jakob, and Sebastian Renner. "Distributional Impacts of Carbon Pricing in Developing Asia." *Nature Sustainability* 4 (November 2021): 1005–14. https://doi.org/10.1038/s41893-021-00758-8.

Stern, David I. (2017). "The environmental Kuznets curve after 25 years." *Journal of Bioeconomics*, vol. 19. https://link.springer.com/content/pdf/10.1007/s10818-017-9243-1.pdf

Stiglitz, Joseph E, and Nicholas Stern, eds. Rep. *Report of the High-Level Commission on Carbon Prices*. Carbon Pricing Leadership Coalition, May 29, 2017. https://static1.squarespace.com/static/54ff9c5ce4b0a53decccfb4c/t/59b7f2409f8dce5316811916/1505227332748/CarbonPricing_FullReport.pdf.

Task Force on Climate, Development and the IMF. (2023). (R. R. Bhandary & M. Uy, Eds.) The International Monetary Fund, Climate Change and Development: A Preliminary Assessment. https://www.bu.edu/gdp/files/2023/03/TF-Assessment-Report-FIN.pdf.

Tenaw, Dagmawe and Alemu L. Hawitibo. "Carbon decoupling and economic growth in Africa: Evidence from production and consumption-based carbon emissions." Resources, Environment and Sustainability, vol. 6 (2021). https://doi.org/10.1016/j.resenv.2021.100040.

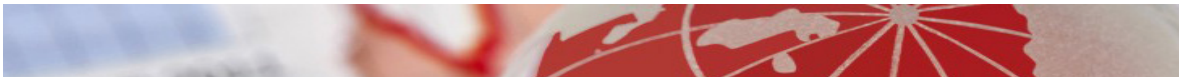
Tenni, B., Moir, H.V.J., Townsend, B. et al. What is the impact of intellectual property rules on access to medicines? A systematic review. *Global Health*, vol. 18, no. 40 (2022). https://doi.org/10.1186/s12992-022-00826-4.

Tienhaara, Kyla. "Regulatory Chill in a Warming World: The Threat to Climate Policy Posed by Investor-State Dispute Settlement." *Transnational Environmental Law* 7, no. 2 (July 2018): 229–50. https://doi.org/10.1017/s2047102517000309.

Tienhaara, Kyla, Rachel Thrasher, B. Alexander Simmons, and Kevin P. Gallagher. "Investor-State Disputes Threaten the Global Green Energy Transition." *Science* 376, no. 6594 (2022a): 701–3. https://doi.org/10.1126/science.abo4637.

Tienhaara, Kyla, Rachel Thrasher, B. Alexander Simmons & Kevin P. Gallagher. "Investor-state dispute settlement: obstructing a just energy transition." *Climate Policy* (2022b). DOI: 10.1080/14693062.2022.2153102

Titleman, Daniel, Noel Pérez Benítez, Michael Hanni, Carlos Pérez Verdía Canales, and Miryam Saade Hazin. (2022). "Fiscal Impact Estimates of a Net-Zero Emissions Transition for Major Hydrocarbon Producers in Latin America and the Caribbean: The Plurinational State of Bolivia, Brazil, Colombia, Ecuador, Mexico and Trinidad and Tobago." *Task Force on Climate, Development and the International Monetary Fund*. https://www.bu.edu/gdp/2022/04/05/fiscal-impact-estimates-of-a-net-zero-emissions-transition-for-major-hydrocarbon-producers-in-latin-america-and-the-caribbean/.



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Tsurumi, T., & Managi, S. (2010). Decomposition of the environmental Kuznets curve: scale, technique, and composition effects. *Environmental Economics and Policy Studies*, *11*, 19-36.

United Nations Conference on Trade and Development. "Investment Policy Hub: International Investment Agreements Navigator." 2023. https://investmentpolicy.unctad.org/international-investment-agreements/iia-mapping.

United States - Restrictions on Imports of Tuna (*US-Tuna*). *Report of the Panel*, DS29/R (June 1994). https://www.worldtradelaw.net/document.php?id=reports/gattpanels/tunadolphinII.pdf.

United States - Import Prohibition of Certain Shrimp and Shrimp Products (*US-Shrimp*). *Report of the Appellate Body*, WT/DS58/AB/R (Oct 1998). https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds58_e.htm.

United States - Certain Measures Relating to the Renewable Energy Sector (*US-Renewables*). *Report of the Panel*, WT/DS510/R (June 2019). https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds510_e.htm.

Van Asselt, Harro. Presentation at Toward a Green and Just Transition: A Policy-Oriented Research Agenda, Boston, MA, Nov. 2022.

Vulnerable Twenty Group (V20) (2022). Climate Vulnerable Economies Loss Report: Economic losses attributable to climate change in V20 economies over the last two decades (2000-2019). https://www.v-20.org/wp-content/uploads/2022/06/Climate-Vulnerable-Economies-Loss-Report_June-14_compressed-1.pdf.

Wang, Yan & Yinyin Xu (2023). "Generating Green Growth: Green Transformation in the Global South and Roles of Development Finance." BU GDP Center, Global China Initiative Working Paper, No. 031. https://www.bu.edu/gdp/files/2023/07/GCI_WP_031_YW_FIN.pdf.

Winning, Alexander and Alex Richardson. "South Africa adopts more ambitious emissions target before climate summit." *Reuters* (Sept 23, 2021). https://www.reuters.com/world/africa/south-africa-adopts-more-ambitious-emissions-target-before-climate-summit-2021-09-22/.

Wold, Chris, Grant Wilson, and Sara Foroshani. "Leveraging Climate Change Benefits through the World Trade Organization: Are Fossil Fuel Subsidies Actionable." *Georgetown Journal of International Law* 43, no. 3 (2012): 635–94.

World Bank (2023). State and Trends of Carbon Pricing 2023. http://hdl.handle.net/10986/39796.

World Trade Organization (WTO) (2022). "Decarbonization standards and the iron and steel sector: how can the WTO support greater coherence." WTO Trade and Climate Change: Information brief no. 7. https://www.wto.org/english/tratop_e/envir_e/trade-climate-change_info_brief_no7_e.pdf.