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WORLD ECONOMIC FORUM

Delivering a Climate Trade Agenda: Industry Insights

WHITE PAPER

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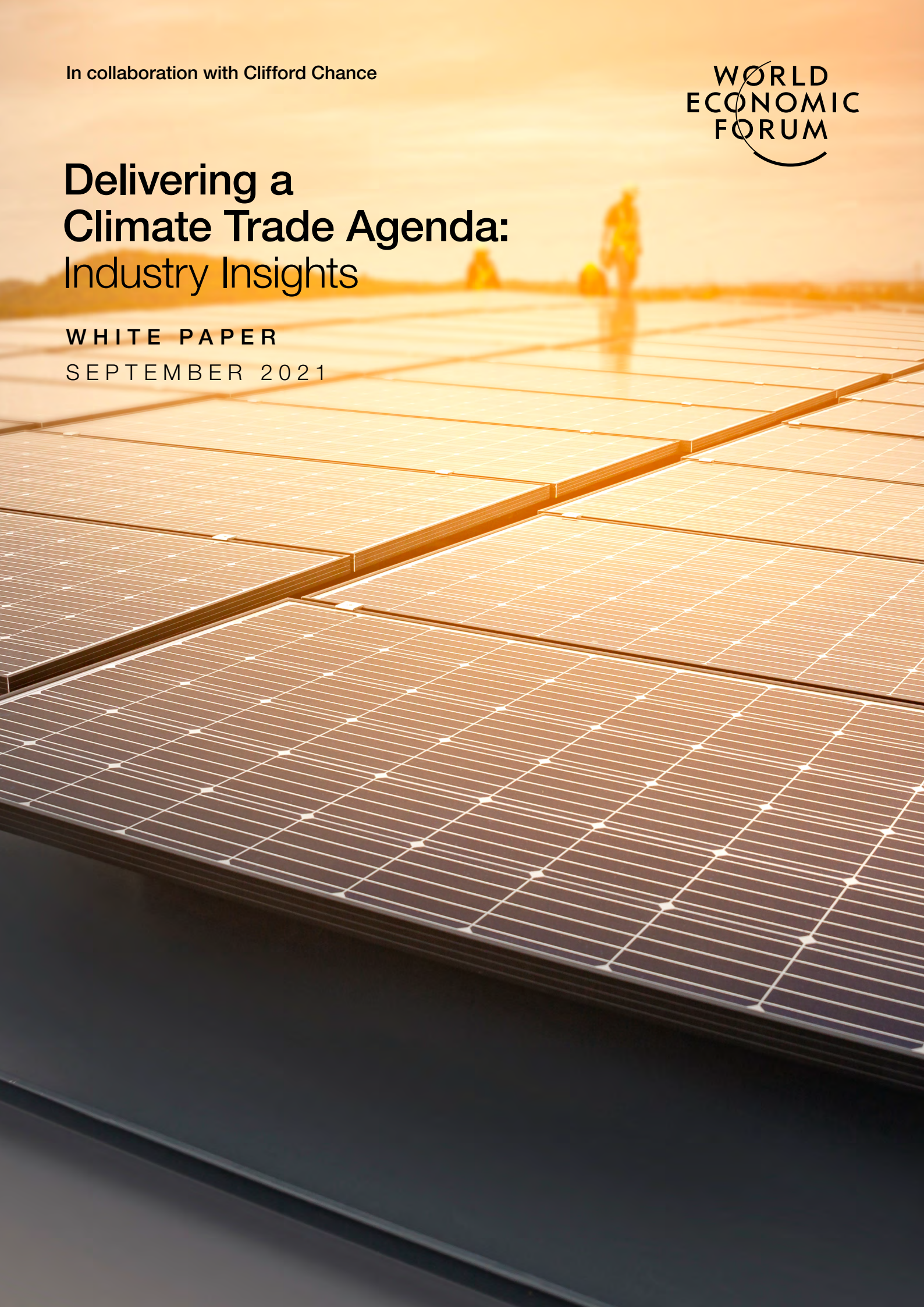

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Foreword

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The latest Intergovernmental Panel on Climate Change (IPCC) report is unequivocal that unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5 degrees Celsius or even 2 degrees Celsius will be beyond reach. The world is already experiencing extreme weather patterns, with deadly consequences for human populations. Many communities face the negative impact of climate change in their daily lives. Floods, droughts, wildfires, extreme temperatures and sudden storms are becoming all too common and frequent. Let there be no mistake, the climate crisis is a human crisis. And to avert a human catastrophe, we must act now.

Only with deep and rapid cuts in emissions of greenhouse gases can we stabilize rising temperatures. Bringing this about will require significant changes by governments, businesses and civil society to transition to clean and sustainable economies across the board in a just way – affecting all sectors from energy generation, transport, manufacturing and services to agriculture. Fully implementing the 2015 Paris Agreement is the world's best chance to change course. Under the Agreement, all nations committed to limit average global temperature increases, build resilience to climate change impacts, and deliver the financial flows required for their common future. This is a promise that nations now need to keep.

This report by the World Economic Forum provides valuable insights into how businesses are taking steps to enhance climate action across markets. Drawing on these perspectives, it identifies opportunities for trade policy to accelerate climate action, while generating new sources of economic growth and job creation. These pathways include making climate-friendly goods and services cheaper and more accessible by reducing tariff and non-tariff barriers. That would send a useful signal to regional and global markets, and help countries to move quickly to apply technology alternatives. But this is only one of many other pathways by which businesses and trade cooperation can support the objectives of the Paris Agreement. Trade policy-makers can also encourage a speedy transition to carbon neutrality throughout the supply chains of internationally traded goods, stimulate investment in key sectors of the climate economy, reduce environmentally harmful subsidies, promote international standards, improve regulatory coherence and foster innovation.

There is no shortage of ideas and opportunities. A key factor in the way forward will be to ensure that the green transition is also just and inclusive, especially where the needs and capabilities of developing countries are concerned. The United Nations Framework Convention on Climate Change (UNFCCC) and the World Trade Organization (WTO) stand ready to help governments and businesses engage in an open and informed dialogue that can ensure trade and climate policies go hand in hand. We are optimistic that such exchanges can help every stakeholder understand where policy signals and action are needed to facilitate deep cuts in greenhouse gas emissions, while driving new economic opportunity and development for all.

Let's roll up our sleeves and get to work.

This foreword is not intended as an endorsement by the WTO or the UNFCCC of the report findings but rather to welcome these as a contribution to discussions.

Executive summary

Historically, trade and climate policy-making have largely happened in separate silos. The urgency of the climate crisis, however, demands that greater attention be given to trade policy's role in accelerating emissions reductions and otherwise mitigating the effects of climate change. The interviews conducted for this report revealed several immediate opportunities for trade policy to support businesses in achieving emissions reductions, as well as areas in which further work is required to ensure coherence between the trade and climate regimes. This report summarizes these findings and suggests paths forward.

Key findings include:

A stable and open global trading environment is critical for the green transition. A lack of trade policy stability will increase the cost and reduce the pace of investment in decarbonization. Accordingly, reducing tariffs on climate-beneficial goods, minimizing non-tariff barriers to trade and facilitating the stability of key supply chains is important for accelerating decarbonization of the global economy.

A level playing field is crucial for enabling high-ambition emissions reductions. As countries move at different speeds towards decarbonization, and use different strategies, the risk of domestic climate regulation being undermined by emissions embedded in traded goods being imported from countries with divergent regulations risks being a barrier to enhanced climate ambition. Ensuring a level playing field where possible, and in line with the principles of the Paris Agreement, will help promote ambitious climate policy action.

The absence of international price signals to incentivize lower emissions production is a barrier to emissions cuts. Across the board, businesses are ready and willing to increase the pace of decarbonization. However, most companies interviewed felt that their ability to scale up investment and produce lower-emission alternatives was constrained by the relatively higher costs of lower-emission production, and the inability under current policy settings to share those costs through their supply chains, including across borders. That is particularly true of those operating in highly commoditized industries such as steel, agriculture, mining and energy.

Trade-related climate responses should be based on open, non-discriminatory architecture. There is no one size fits all policy for achieving decarbonization. Unilateral, bilateral and plurilateral climate-related trade policies can play an important role in spurring action, driving ambition and developing innovative solutions to climate issues. However, such mechanisms should be designed to be trade-facilitating and align with relevant international principles (such as World Trade Organization obligations) as practices and knowledge evolve.

The time is ripe for trade policy to play its role in accelerating climate action.

1 Introduction

Dramatic weather events, and the catalysing focus of both the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment report and the 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC) in November 2021, have brought renewed international attention to the urgency of climate action and the opportunity for a green recovery from the COVID-19 pandemic. The UN Secretary-General, António Guterres, described the IPCC's most recent report as a "code red for humanity", warning that "the evidence is irrefutable: greenhouse gas emissions from fossil fuel burning and deforestation are choking our planet and putting billions of people at immediate risk".[1] Many governments are looking to increase ambition and some are pledging to achieve net-zero emissions economies.[2] Yet more is required from all actors – public and private alike – to meet the urgency of the climate crisis.

Businesses across all parts of the global economy are also committing to enhanced climate action, but the pace of change needs to accelerate. More than 20% of the world's largest public companies – representing sales of about $14 trillion – have committed to achieving net-zero emissions goals.[3] Corporate commitments to net-zero increased threefold between 2019 and 2020.[4] Core to many of these businesses' strategies is finding opportunities to reduce emissions in supply chains. The pace of this shift will be influenced by the underlying regulatory environment – including trade policy.

Until very recently, there has been limited cooperation between climate and trade policy; and trade policy is often criticized for not doing enough to advance environmental goals. International climate dialogue takes place at the United Nations and is led principally by foreign or environment and climate change ministers. Trade policy is pursued at the World Trade Organization (WTO), as well as through plurilateral and bilateral agreements – primarily under the leadership of trade ministers. Little effort has been made to adapt the global trading system for climate action. Initiatives such as the negotiations among 17 WTO members for an Environmental Goods Agreement (EGA) stalled in 2016. Forward-leaning efforts – for example, to end fossil fuel subsidies and develop a climate and sustainability-focused trade agreement (the plurilateral Agreement on Climate Change, Trade and Sustainability (ACCTS)) – represent significant innovations but need to be scaled up as a matter of urgency.

Now, however, more stakeholders are recognizing the potential for trade policy to help cut emissions. This includes the promise of action among the G7 nations and at the G20 to align trading practices with climate commitments, to promote the transition to sustainable supply chains and address carbon leakage (see Box A).

Stable, open trade brings growth, scale, innovation and technology diffusion, all of which contribute to decarbonization and adaptation. Conversely, trade rules can also impede climate action if they curtail pro-climate policy interventions or fail to discipline market distortions that incentivize higher emissions activities and disincentivize investment in emissions-reducing measures or technologies. International dialogue, including with the private sector, is critical for ensuring these considerations are balanced appropriately.

This report highlights for international and domestic policy-makers the views of businesses on the key trade and regulatory challenges to decarbonizing supply chains, together with some potential solutions. It offers a qualitative, rather than a quantitative, view at this stage. While it is possible to estimate the costs for importers of climate-friendly technologies by reviewing applied most-favored nation (MFN) tariffs, and likely trade increases in goods when tariffs are lowered,[5] it is harder to estimate emissions reductions specifically associated with such tariff removals. Only a few studies have tried such an analysis, which is generally limited to specific technologies such as renewable electricity generation, and focused on the effects of tariff liberalization.[6] This report aims to provide a basis for dialogue on various trade policies and actions, including, but going beyond, tariff reductions alone.

To maximize policy effectiveness, it is important to understand how private-sector emissions reduction efforts align with, and can be bolstered by, interventions at the national and global level. The report's concluding section offers an overview of climate-friendly trade measures that could help decarbonize supply chains. These are initial proposals for further analysis and engagement. Accordingly, the report indicates where more work is required, as well as potential sequencing and modes of delivery.

To produce this report, we interviewed representatives from more than 30 companies about their trade and climate strategies. Collectively, interviewees have operations across all regions and represent emissions-relevant sectors including transport, energy, materials and infrastructure, manufacturing, consumer goods, and food and beverages. Using a detailed questionnaire, we examined the key trade-related push-pull factors driving these strategies, including:

- Tariffs on climate-friendly goods
- Regulatory fragmentation
- Divergence on standards
- Subsidies and market distortions
- Supply chain emissions accounting, verification and reporting

Carbon pricing and the potential introduction of border carbon adjustments

The role of technology

All of the companies interviewed were focused on decarbonizing their supply chains, although within different time frames. More than 75% had committed to net-zero emissions or had set reduction targets in line with a 1.5ºC scenario. The insights offered on trade and climate action have been organized into two categories:

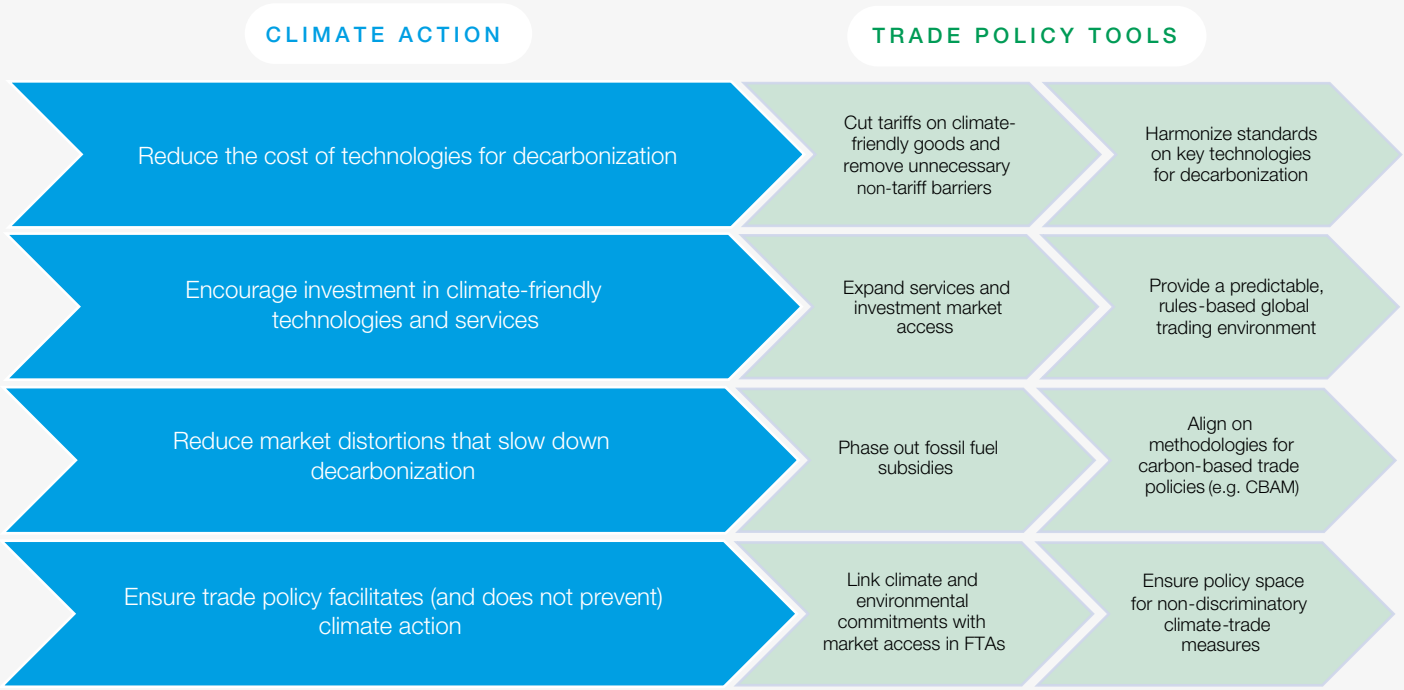
- **"Conventional" trade policy issues** such as tariffs on environmental goods; non-tariff barriers such as local content requirements; divergence on standards and labelling; market distortions, in particular, fossil fuel subsidies; and challenges involving the circular economy.
- **"Emerging" climate-specific trade policy issues** such as mechanisms to ensure a level playing field when countries have asymmetric climate policies (and related difficulties in calculating and reporting emissions); the importance of emissions-based price signals in incentivizing decarbonization; and concerns about the transparency and design of potential border carbon adjustments and the risk of regulatory divergence.

Many companies recognized that the transition is taking place at different speeds and levels of intensity across countries and sectors. Interviewees highlighted the importance of providing support and incentives to developing countries and to supply chain partners in developing countries, to enable them to undertake the investments necessary to reduce their emissions and help ensure a just transition to net-zero.

BOX A Increased momentum for green trade talks

In addition to statements by the G7 and G20 on climate change and trade, and ongoing ACCTS negotiations, the topic of trade and climate change is gaining increased prominence at a global level. Action on trade and climate has been included in intergovernmental exchanges at the WTO through an initiative launched by more than 50 WTO members in November 2020 – the Trade and Environmental Sustainability Structure Discussions (TESSD).[7] Participants are discussing a ministerial statement on the role of trade policy in addressing climate change and other environmental challenges to be adopted at the Twelfth Ministerial Conference of the World Trade Organization (MC12). This could form the basis of new trade cooperation initiatives in the months to come.

FIGURE 1 Opportunities to mobilize trade policy to advance climate action



Source: Clifford Chance, World Economic Forum

2 Trade barriers to decarbonization

2.1 A stable, rules-based and open global trading environment is critical to the green transition

Businesses interviewed for this report universally emphasized the huge investment in goods, technologies and services that will be required to transition to net-zero; and the critical role that trade will play in disseminating these throughout the world. Accordingly, the stability, predictability and openness of the global trading system continues to be of paramount importance. While these fundamentals are not new, interviewees made clear that the scale and urgency of the climate crisis means that it is more important than ever to ensure that trade policy facilitates the free flow of goods, technology, services and investment across borders. **Trade barriers or trade policy instability will increase the cost and reduce the pace of investment in decarbonization.**

Businesses mentioned that the strains faced by the rules-based global trading system in recent years had made supply chain planning more difficult. Increased trade friction arising from unilateral recourse to trade restrictions, tariffs and retaliation has affected supply chains around the world. **In some cases, trade disputes are linked to industries directly related to climate action**, including disputes regarding solar panels and renewable energy subsidy programmes.[8] Trade remedy measures (such as anti-dumping and countervailing duties) have also increasingly been imposed on renewable energy sources, in particular solar energy and biofuels.[9] These measures increase the costs of renewable energy and slow deployment.

In other cases, interviewees signalled that broader trade conflicts have required processes and supply chains to be modified, often slowing climate action. For example, tariffs have affected trade flows between China and the United States, inducing changes to shipping routes in key commodities and adding to transport emissions. Additional tariffs and the increased use of export restrictions have created greater complexity for supply chain planning. In specialized industries producing technologies for decarbonization, it can be particularly challenging for affected businesses to locate alternative sources of supply.

Interviewees also highlighted the importance of actively aligning trade policy with decarbonization. They noted as useful examples the past WTO EGA negotiations and ongoing ACCTS negotiations among six countries.[10] Many interviewees indicated that, in aggregate, the

wide range of goods required for climate action means that tariff reductions would play a role in reducing costs – in particular, for some industries and jurisdictions. However, companies often found it difficult to precisely estimate the impact of tariff reductions as the effects are often distributed across, and sometimes hidden in, supply chains.

This insight is bolstered by the call to cut tariffs on climate-friendly goods issued by 70 global chief executives as part of a broader message on stepping up the transition to net-zero emissions issued in June 2021 through the World Economic Forum.[11] Several companies and experts felt that the pace of decarbonization will in part be a function of access to the highest-quality, most efficient and innovative technologies across different geographies – and trade policy will play a key role in influencing the speed and scale at which these technologies are disseminated.

The interviews identified certain technologies that will be essential for many industries to decarbonize. These technologies include those related to energy efficiency (such as energy-efficient motors – see Box B), renewable energy production, electric heat pumps, electric vehicles (EVs) and components, battery storage technology, energy management systems, heavy-duty fuel cells, electrolyzers and eco-responsible packaging. Since measuring emissions is an important starting point for all firms, technologies used for greenhouse gas (GHG) data collection and related services will also be important.

Many companies stressed the need to continue scaling renewable energy infrastructure, given the key role electrification can play in decarbonizing a wide range of activities. In this context, some companies identified long delays in obtaining planning consents for renewable generation, and noted that in some jurisdictions a lack of certainty in consenting criteria and time frames disincentivized investment in renewables. Companies also noted, however, that decarbonization cannot be achieved by electrification alone and requires an enabling policy framework across the ecosystem – including for EVs and heating and industrial processes (see Box C). Investment is also needed to develop emerging technologies and processes that are not yet commercially viable.

The 2022 iteration of the Harmonized Commodity Classification and Coding System (the Harmonized System, or HS) provides new opportunities to measure and facilitate the elimination of barriers to trade in key environmental goods (See Box D).[12] Regardless of this progress, however, there will always be technical and political complexities inherent in determining what precisely constitutes an "environmental good". Many interviewees emphasized the importance of not letting the perfect be the enemy of the good. Businesses were clear that an outcome on tariff reductions for environmental goods would signal that governments are serious about aligning trade and climate policy. Additionally, the huge shift in investment towards a greener economy that will occur over the coming years suggests that, even if tariff reductions involve some products that can be used for either environmental or other purposes, the benefits would flow overwhelmingly to goods used for environmentally beneficial purposes.

BOX B Energy-efficient electric motors

Electric motors in aggregate account for 53% of total global electricity consumption.

These drive appliances of various sizes ranging from cooling fans in computers to huge motors in heavy industries. While there are international initiatives to promote efficient appliances – such as the Super-Efficient Equipment and Appliances Deployment (SEAD) Initiative, as well as the International Energy Agency's (IEA) Electric Motor Systems Annex – the push to adopt the highest energy efficiency class is not yet widespread.

BOX C Lower emissions technologies in the energy sector

Energy use accounts for 73% of anthropogenic GHG emissions worldwide.[13] Scaling clean energy use for transport, electricity and heat, buildings, manufacturing and construction, as well as other fuel combustion is critical to achieving the goals of the Paris Agreement. The IEA Technology Perspectives 2020 report defines low-carbon energy technologies as: those that provide electricity or heat using renewable sources of energy; nuclear power; carbon capture, use and storage (CCUS); hydrogen derived from low-carbon energy sources; technologies that improve energy efficiency; non-fossil power and storage options; and cross-cutting technologies that minimize CO_2 emissions. Low-emissions energy sources are growing, but still account for only one-fifth of energy supply worldwide.[14]

The IEA also notes that transforming the power sector alone will achieve just one-third of the reductions needed to achieve net-zero emissions. Spreading electricity to more parts of the economy will require global power-generation capacity to be two to five times greater in 2050 than today. Increases in low-carbon hydrogen will be needed for sectors in which the use of electricity is difficult, such as primary steelmaking or maritime shipping.[15]

BOX D | **Plant-based proteins**

Plant-based meat substitutes, which are growing in popularity as a lower-carbon substitute for animal protein, illustrate some of the important trade barriers to scaling up "green" products. Companies highlighted that, because there is no specific HS classification for plant-based meat substitutes, and most countries have not developed their own classifications, these products generally fall under a residual "not elsewhere classified" code – together with a range of other (often very different) agricultural or processed food products. This classification often requires importers to provide additional import documentation or certifications, and subjects the products to higher tariff rates than other processed foods. An interviewee also noted that the absence of a specific HS code also made it more difficult for countries to negotiate tariff concessions for these products in trade negotiations.

In addition, non-tariff measures such as labelling requirements and restrictions can slow the uptake of these alternative food products. For example, proposals have been made in a number of jurisdictions to restrict how plant-based proteins are described, such as by prohibiting references to "meat" or other traditionally animal-based descriptors in labelling. Significant variations in labelling requirements for plant-based meat substitutes between jurisdictions could also create an additional barrier to scaling up supply.

2.2 Market distortions matter

Interviewees identified various types of subsidies that could affect climate action. **Several companies highlighted the market-distorting impact of fossil fuel subsidies for abatement planning and investment.** For these interviewees, fossil fuel subsidies act as a counterweight to carbon pricing or equivalent measures, keeping the price of high-emitting activities artificially low. However, some interviewees noted that removing fossil fuel subsidies needs to be done in a fair and equitable manner in some economies, including where subsidies serve an important social purpose, such as enabling those on low incomes to access cleaner cooking fuels than traditional biomass. Distinctions can also be made between production and consumption subsidies in this respect. Some interviewees also noted that the exit from high-carbon fossil fuels may require bridging strategies, such as subsidies for sustainable aviation fuels, which may be the most viable short-term alternative for industries like aviation.

These concerns mirror those highlighted by international organizations. The Organisation for Economic Co-operation and Development (OECD)'s and IEA's combined estimates of fossil fuel production and consumption subsidies for a group of 52 countries totalled $475 billion in 2019 and IMF estimates are significantly higher still.[16] Many experts agree that these subsidies countervail domestic efforts to curb climate change and rarely benefit the poorest segments of the population.

In other cases, many firms called for targeted subsidies to support clean technology development or infrastructure, particularly where investment risks are high or technologies are not yet commercially viable. Interviewees cited hydrogen and ammonia applications and some forms of early-development renewable electricity generation as relevant examples, but highlighted the importance of subsidies in these areas being subject to robust cost-benefit analyses. Some interviewees, however, expressed concern about the increased likelihood of subsidies being made contingent upon the use of domestic over imported goods, which, rather than facilitating the most efficient uptake of environmental goods, could price out "best-in-class" technologies in some markets. They saw that risk growing as governments look to recover from the COVID-19 pandemic by incentivizing domestic capacity.

More generally, some interviewees said that a lack of competitiveness in markets – due to subsidies or import barriers – has made it challenging to implement consistent minimum sustainability standards for procurement across global supply chains, as greener alternatives are unavailable in some markets.

2.3 Non-tariff barriers, particularly local content requirements, can pose challenges for decarbonization

The term "non-tariff barriers" (NTBs) encompasses a wide range of measures that make it more difficult (or expensive) to get imported products to market. **Existing research on trade in environmental goods and services suggests NTBs can act as a greater drag than tariffs.**[17] Local content requirements (LCRs) are often cited as among the most problematic NTBs, especially in relation to renewable energy and green technology.[18] While some forms of LCRs are inconsistent with WTO obligations, they continue to be used – in various forms – by a number of countries (particularly in the context of government procurement). Indeed, LCRs in the renewable energy sector have been the subject of various recent trade disputes at the WTO, involving several jurisdictions including Canada, China, India and the United States.[19]

Our interviews confirmed that these insights hold true for companies pursuing climate action today. Several firms highlighted LCR issues in relation to EVs, such as requirements in certain markets that EVs must have domestically produced batteries. In other markets, support schemes are oriented towards domestic manufacturers. Companies indicated that new plans to incentivize domestic production of battery parts in certain markets could increase costs and slow the rate of EV deployment. Interviewees also said there are markets in which local content thresholds are currently lower for EVs than for internal combustion engines (ICEs), but where domestic content requirements will increase over time as the domestic market for EVs expands.

Interviewees noted that EV manufacturers are often required to satisfy prescriptive qualifications for design, development, production, after-sales services and other capabilities that go beyond regular ICE vehicle requirements. EV chargers also need to be widely deployed, but requirements for safety and protocols can differ. One interviewee noted that it remains a "laborious process" to go from product innovation to product placement, and divergent requirements make the process even more onerous when selling into new markets.

2.4 Divergent technical regulations, standards and conformity assessment procedures can disrupt industry transition

Technical regulations, standards and conformity assessment procedures can also constitute NTBs, particularly when countries take different approaches. **The interviews highlighted many examples in which regulatory divergence may slow the uptake of climate-friendly goods or investments in decarbonization:**

- Interviewees pointed to uncertainty about **low-carbon transport regulations** across markets, making it difficult to plan investments. That can be compounded by differences at the subnational level. In some cities, a push towards EVs generally exists, but in others, varying technical operating standards for roadworthiness must be met. Similarly, some interviewees highlighted how a lack of regulatory coherence in respect of EV charging infrastructure has led to significant gaps across different European Union (EU) member states as well as in other countries, slowing uptake.
- Interviewees flagged that **standardization efforts are particularly important for shipping and aviation emissions**, given their inherently cross-border nature. Businesses spoke about the need for governments to align their standards for reporting emissions (see Box E). Stakeholders noted the need to accelerate the uptake of alternative fuels by ships.[20] Regarding aviation, many interviewees see sustainable aviation fuels (SAFs) playing a key role as, at the very least, an interim solution for decarbonizing the sector. The wide range of SAF feedstocks and production technologies (each with varied benefits, drawbacks, and cost and emissions profiles) means it will be important for industry and governments to align on international certification benchmarks for sustainability and life cycle emissions assessments in order for these technologies to be rolled out at the necessary speed and scale.[21]

– On **sustainable transport fuels** more broadly, companies gave examples of different regulations for calculating emissions, which can produce different results. There are also differences with regard to which feedstocks are acceptable. For example, the EU's Renewable Energy Directive (now RED II) defines the sustainability and emissions criteria with which bioliquids used in transport must comply to count towards member states' renewable energy targets and to be eligible for public financial support.[22] In California, the Low Carbon Fuel Standard outlines the criteria for calculating the carbon intensity of petrol and diesel fuel substitutes, but in many cases they are not the same as those used by the EU.

– Some companies flagged an absence of international standards relating to **green steel**. In principle, green steel could involve low-emissions production using low-carbon hydrogen or electricity generated by renewables, as well as other options. Some industry actors have made calls for certification standards for low-emissions steel.[23] Interviewees noted that such standards could be helpful in generating a product pull across supply chains to switch production methods and pursue innovative technologies – as many felt there was not yet a "green premium" for switching to low-emissions production.

– Shortcomings in lower-carbon standards were also cited by **cement, mining and metals** industries. It will be important for policy-makers to align on what processes and production methods can be classified as sustainable – based on objective and scientifically justified metrics – particularly if standards are translated into or used as a basis for trade policies (see Box F). Metrics such as those in the EU Taxonomy Regulation also provide a framework for identifying which activities are "sustainable". Ensuring consistent and non-discriminatory application of such mechanisms across countries will be important.[24]

– In the food and beverage sector, some companies expected issues to emerge in relation to **standards for climate-smart agriculture or labelling requirements**. One interviewee described the risk of a "soup of labelling". Many companies are working with farmers and suppliers to improve agricultural practices such as soil management, adoption of regenerative methods, new technologies and storage practices. Yet changing agricultural practices can come with risks to productivity, particularly for smallholders, who often do not have the capital to invest and for whom reduced crop output or other transition issues could prove disastrous.

– In some areas, **standards may not be ambitious enough** to incentivize the roll-out of greener alternatives. One interviewee explained that SF6, a gas used in electricity grid infrastructure with a global warming potential (GWP) 23,500 times greater than CO_2 (and a lifespan of 3,200 years in the atmosphere), continues to be used in new equipment despite the recent emergence of several climate-friendly SF6 replacements. As green technologies such as these emerge, it is important that standards continue to keep pace, and maintain coherence, across markets.

BOX E Emissions-reporting standards in the maritime shipping sector

Recent negotiations at the International Maritime Organization (IMO) have attempted to reach agreement on an industry-wide approach to reducing emissions from maritime transport.[25] The various emissions-reporting standards for bunker fuel under discussion at the IMO can broadly be categorized as either being exclusively concerned with fuel tank consumption during a voyage (tank-to-wake), or life cycle assessments considering the emissions incurred in production and carriage of the fuel in addition to its eventual consumption on board (well-to-wake). The adoption of either standard will produce very different decarbonization incentives for shipowners.

For example, a vessel powered by liquefied natural gas (LNG) will emit significantly less methane and other GHGs than one using fuel oil (and, as a result, require fewer credits under an emissions trading scheme). On that basis, shipowners are likely to divest from fuel oil vessels into LNG under a tank-to-wake reporting standard. This competitive advantage is supported by the fact that methane emissions from LNG use in maritime transport increased by approximately 150% between 2012 and 2018, although during the interview process this policy was seen by many as greenwashing LNG. A well-to-wake reporting standard would incorporate the emission-intensive mining and liquefaction processes for natural gas in reported emissions, potentially incentivizing shipowners to invest in greener alternative fuels.

However, different application of standards can create challenges for ship owners. As well-to-wake reporting takes into account the full supply pathway and emissions footprint of a fuel, a fuel such as steam-methane reforming (SMR) hydrogen (natural gas reduced to hydrogen and carbon by a water-gas shift reaction) is reported as having an emissions profile of just under half that of combusted fuel oil – i.e. close to the reported emissions of a new generation LNG combustion engine.[26] Conversely, SMR hydrogen would be

considered a net-zero fuel under tank-to-wake reporting. As a result of the reporting arbitrage, shipowners may be less incentivized to adopt highly beneficial but not entirely net-zero transition fuels, instead favoring incremental improvements such as LNG until alternatives such as clean hydrogen become more cost-effective. This delay could be fatal to achieving the IMO's declared primary objective of a 40% reduction in emissions by 2030 compared with 2008.

Several interview respondents emphasized that adopting a well-to-wake reporting standard is crucial, provided that it is accompanied by further governmental measures to rapidly decrease the cost of production of cleaner fuels. Governments may also play a role by requiring "guarantee-of-origin" certificates to assist with the adoption of wholly substitutable green alternatives to LNG such as biomethane. These types of transition fuels can be used in LNG combustion engines and, according to users, may result in a 67% reduction in emissions when using a well-to-wake standard.

BOX F A multitude of emissions-reporting standards

A number of businesses also highlighted the existing multitude of standards, regulations and reporting requirements for emissions measurement and reduction.[27] For example:

- Calculation of emissions for mandatory emissions trading or taxation purposes (e.g. EU Emissions Trading System [ETS] reporting)
- Emissions inventories for sustainability reporting (e.g. the Carbon Disclosure Project [CDP], WWF, Science-Based Targets Initiative)
- Reporting for climate-related financial disclosures (e.g. Task Force on Climate-Related Financial Disclosures)
- Calculation of emissions for particular product or sustainability standards/labelling (e.g. GHG Protocol Product Standard)
- Emissions accounting for trade-related climate measures (e.g. the EU's proposed Carbon Border Adjustment Mechanism [CBAM])

These emissions accounting mechanisms present opportunities because, more than ever before, they reflect the reality that businesses are actively seeking to better understand the emissions embedded in their supply chains, and are motivated to enhance the quality and comparability of this information.

However, the increasing breadth of emissions accounting-related standards also increases the risk of fragmentation, making private and public choices more challenging. While the businesses interviewed were generally able to manage existing reporting requirements, many flagged the issues faced by smaller suppliers, as well as the inconsistency of information and challenges in verification. Many businesses outlined problems they had faced in obtaining information about Scope 3 emissions embedded in their supply chains – emissions that result from supply chain activities beyond a company's ownership or control. The absence of comparable emissions information or standards made it difficult for companies to make informed choices regarding one product over another.

Larger businesses with more vertically integrated supply chains or closer relationships with upstream suppliers naturally found it easier to measure and influence their Scope 3 emissions – and often worked closely with their supply chain partners to identify how best to reduce emissions. Accordingly, where supply chains are more fragmented or involve smaller independent producers, it will often be more important to have comparable standards for measuring Scope 3 emissions and reward lower emissions producers.

For governments, meanwhile, diverging accounting standards may make pursuing climate-related policies deeper into the supply chain or on other products (such as agricultural products, which have a more complex carbon accounting profile than products like steel or aluminum) more contested. It is notable, for example, that the EU's public CBAM proposal excluded Scope 2 and 3 emissions (while leaving open the possibility of future inclusion) – potentially due in part to the hurdles to accessing this information in an accurate and comparable manner.

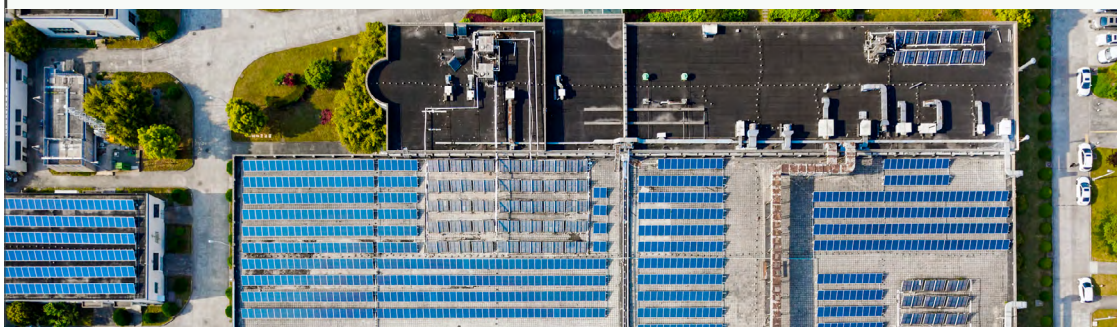
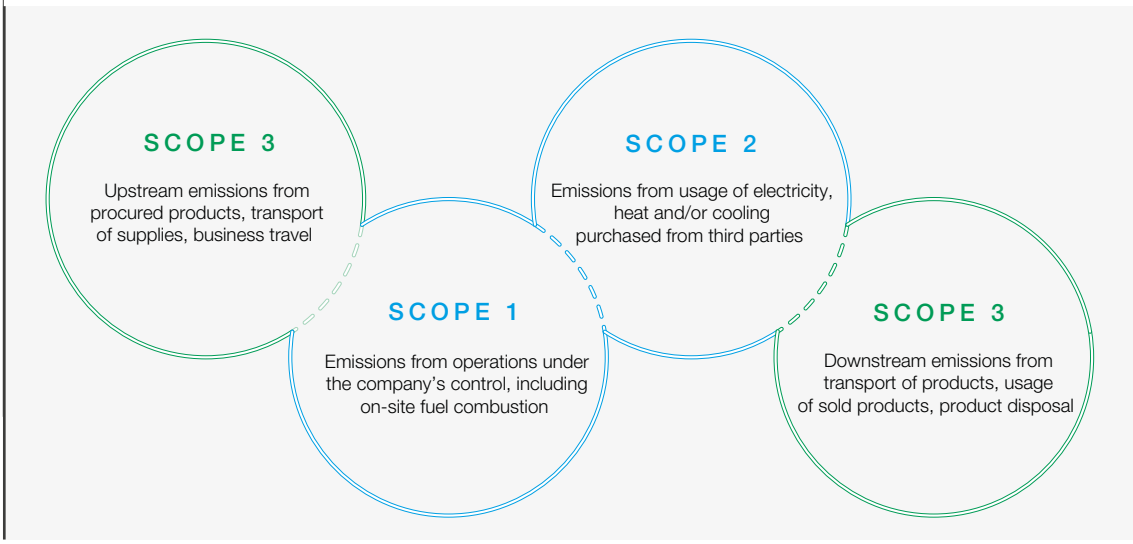


FIGURE 2 | **Emissions scopes**



Source: GHG Protocol, BCG, World Economic Forum, *Net-Zero Challenge: The Supply Chain Opportunity*, 2021: https://www.weforum.org/reports/net-zero-challenge-the-supply-chain-opportunity

2.5 Services, and an enabling technology environment, are critical to decarbonization

"Environmental services" are an important complement to environmental goods. Numerous studies have shown how environmental goods are often bundled with services for assembly, installation, technical testing and analysis, education, advice, consultation, management, repairs, computers or research and development (R&D).[28] To date, though, there is no global consensus about which services should be considered "environmental" for the purpose of measurement or trade liberalization. The statistics that do exist, however, suggest that trade in environment-related services has grown significantly over the past decade.[29]

Our interviews emphasized the importance of digital services for climate action in supply chains. Focusing on a narrow category of "environmental services" misses the key point that a broad range of services – from digital and telecommunications services to engineering, cloud storage and artificial intelligence (AI) – will play an integral role in the transition to net-zero. Several manufacturers indicated that, where once they would sell just a product, now their approach is to sell a whole package, with follow-on services supporting decarbonization.

After-sales services are particularly important when products are sold overseas and the customer is distant. Sensors and big data aggregation facilitate better monitoring, parts replacement and so on. Some firms indicated plans to use AI to maximize efficiency on transport routes; make use of drone deliveries to reduce transport emissions; employ satellite imagery for monitoring and tracking of emissions or environmental impact; use blockchain tools for improved traceability; and adopt other similar forms of technology with a high digital content.

Interviewees also highlighted the increasing importance of digital services and grid aggregation technology in managing electricity networks – which will need to become more complex and sophisticated as electricity becomes an ever more critical element of the energy system. These services can play a vital role in both ensuring efficient grid management and supporting the integration of a greater proportion of renewable energy into the system.

Delivering such services often relies on cross-border data flows. Firms indicated that, although barriers to industrial data sharing were generally manageable, especially for larger businesses, the proliferation of data flow restrictions could curb these activities in the future. Equally, the use of new technologies in certain markets or for certain applications may increasingly be regulated, prompting one firm to emphasize the importance of trade commitments to a balanced and transparent regulatory environment.

A number of businesses also highlighted the importance of intellectual property (IP) protection in innovative green technologies, noting that appropriate IP protection and enforcement regimes can provide the incentives and certainty necessary to develop and scale up green innovations and the confidence to disseminate these technologies globally. These findings are backed by a World Intellectual Property Organization (WIPO) analysis on IP and green technologies, which identified evidence that "inadequate IP protection compromises the diffusion of technology" and highlighted the broader linkages between trade policy, IP protection and dissemination of green technology.[30]

2.6 Hurdles exist in scaling circular solutions and ensuring flows of raw materials

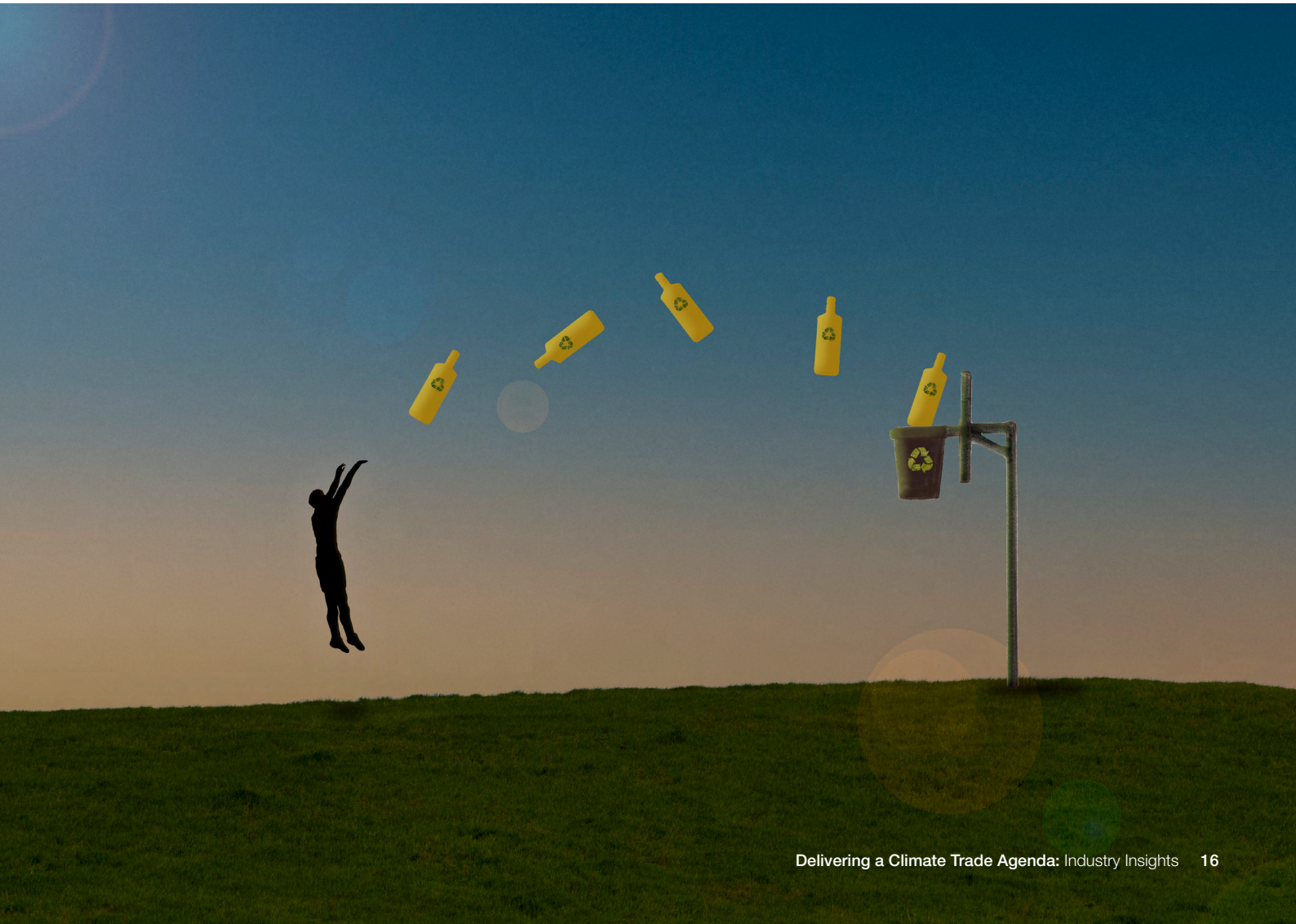
The circular economy can be defined as an industrial system that reduces waste and reprocesses materials through some combination of improvements in design, products, systems and business models.[31] For many of the companies interviewed, shifting to a more circular approach forms part of their efforts to reduce GHG emissions, whether through material efficiency, secondary materials use or implementing regenerative natural systems. **Indeed, only 8.6% of current global economic activity is estimated to be circular,[32] and firms were quick to point out several supply chain issues that act as a drag on circular activities.**

For example, some companies looking to increase the recycled content of their packaging or inputs faced challenges accessing sufficient supply. In other instances, firms indicated obstacles in using reverse supply chains to bring products distributed worldwide back to factories for reprocessing. Barriers include limitations regarding traceability for product recovery across borders, products categorized as hazardous waste encountering heavy trade documentation requirements, and trade processes that do not function smoothly.

Interviewees also noted that a lack of consistency in standards for recycled content is a barrier to creating economies of scale in the use of recycled content – holding back investment in the sector.

Several interviewees pointed to problems with reprocessing batteries in this context.[33] Economies of scale are required for battery recycling, which can entail cross-border trade for items to reach specific facilities. However, several companies indicated that it is important to avoid shipping waste overseas where possible. Domestic circular economies can create useful sources of materials inputs – though some interviewees recognized this may not be possible in all contexts.

Many interviewees also highlighted supply-chain risks for raw materials used in some clean energy technologies, particularly if countries resort to export restrictions. Around 86% of the world's lithium, which is used to create EV batteries, is mined in just three countries – Australia, Chile and China.[34] China is also responsible for 72% of the world's cobalt refining capacity. Some firms saw the potential for trade conflict involving these raw materials.



3 Facilitating emissions reductions across globalized supply chains

3.1 Price signals for emissions reductions are critical to achieving net-zero

Many interviewees recognized that an absence of price signals to incentivize lower emissions production is a key barrier to decarbonization. In this respect, businesses often highlighted a disconnect between governments' climate ambitions and targets, and the specific regulatory measures required to incentivize action. Most companies interviewed felt that their ability to scale up investment and produce lower-emissions alternatives was held back by the relatively higher costs of lower-emissions production, and the inability under current policy settings to share those costs throughout their supply chains, including across borders. That is particularly true of those operating in highly commoditized industries such as steel, agriculture, mining and energy. Around two-thirds of interviewees supported more active carbon pricing and many emphasized that carbon pricing will often be the most important mechanism for making green technologies more competitive.

This shortcoming is significant, since estimates indicate that when abatement costs are distributed throughout a supply chain, the price increase of the end product is relatively low. A recent World Economic Forum report estimates that achieving net-zero upstream emissions would add only €500 ($585) to the cost of a €30,000 ($35,000) car.[35] Spreading transition costs is a practical way to drive towards net-zero by incentivizing all firms to decarbonize some of the hardest-to-abate sectors.

The issue is not specific to trade. Mechanisms for effectively pricing carbon remain a politically and technically difficult policy tool to implement in many jurisdictions around the world. Governments are approaching this issue in different ways and relying on various options to stimulate emissions reductions across their economies. Trade means that production emissions do not always occur in the country in which products are consumed; and some emissions occur beyond borders. Although difficult to quantify – in part, due to the absence of harmonized standards for measurement – most estimates put the total amount of emissions embedded in trade at more than 20% of total global emissions[36] (with some estimates as high as 38%).[37] Accordingly, given the speed and scale of emissions reductions required to limit climate change, it is increasingly clear that the relationship between carbon price signals and global supply chains needs to be considered.

So, what would that mean in practice? A broad-based global carbon-pricing scheme would require a level of economic integration and political consensus that is unlikely to be achieved at a sufficient pace to respond to the urgency of the climate crisis. As an alternative, International Monetary Fund (IMF) experts have suggested countries agree to an international carbon price floor with different tiers depending on a country's level of development.[38]

Article 6 of the Paris Agreement, meanwhile, provides for "cooperative approaches" between and among countries, such as international emissions trading and a specific market mechanism. Talks to establish details have progressed slowly and unevenly over the years. The outcomes under Article 6 are not designed to give way to a common pricing scheme, but rather to facilitate the spread and trading of reductions between countries, where some may have the means to act where others cannot.[39] This may also inform the linkage of various cap-and-trade emissions schemes. **Many companies interviewed indicated that outcomes relating to Article 6 at COP26 would support global climate action.**

But global carbon-based pricing is not the only mechanism for sending carbon-based price signals through supply chains. A range of other tools, such as sustainability standards, border adjustment mechanisms, "carbon clubs",[40] carbon-linked tariffs for emissions-intensive sectors such as steel,[41] internal carbon-pricing schemes, green procurement and sustainability-linked finance[42] (to name but a few) can serve similar functions to carbon pricing, by acting as carbon-price proxies. These mechanisms provide a means by which lower-emissions products can be preferred and incentivized – either through a direct price advantage (e.g. via a border carbon adjustment) or a non-price-based or indirect advantage (e.g. enabling a preference for an input with lower embedded emissions that allows a company to record reduced Scope 3 emissions for its sustainability reporting, marketing or financing purposes).

Many businesses also emphasized the importance – and in some instances, unrealized potential – of **green government procurement policies** to help build markets for innovative green goods and "raise the bar" by setting ambitious green standards that reward green products and production methods. In addition, businesses also noted that private-sector procurement could play a similar role in many markets, with some businesses developing procurement policies that specifically incentivize suppliers to employ more sustainable practices.

Interviewees suggested that it would be important to design these policies in a way that is non-discriminatory, trade-facilitating and focused on climate rather than protectionist objectives. If that is not done, these policies

risk acting simply as a new form of trade barrier and potentially curbing investment in critical technologies and production processes. Getting this balance right – particularly given the inherent complexity of emissions accounting – is critical for ensuring that any emissions-related trade policy measures are built on the back of harmonized and non-discriminatory standards for measurement and verification.

Some sectors face particular challenges in transmitting price signals across borders in order to encourage emissions reductions. For example, several interviewees noted the complexity of decarbonizing agriculture and commodities trade, in part linked to an inability to transfer a green premium through supply chains (often due to the absence of carbon pricing or equivalent mechanisms, or a lack of common standards that enable customers to preference greener alternatives). Other companies emphasized that technologies which are available now – such as low-carbon hydrogen – have the potential to make a big impact, but more work is required from a regulatory perspective to ensure the economics of these greener alternatives are able to compete on a level playing field with higher-emissions technologies.

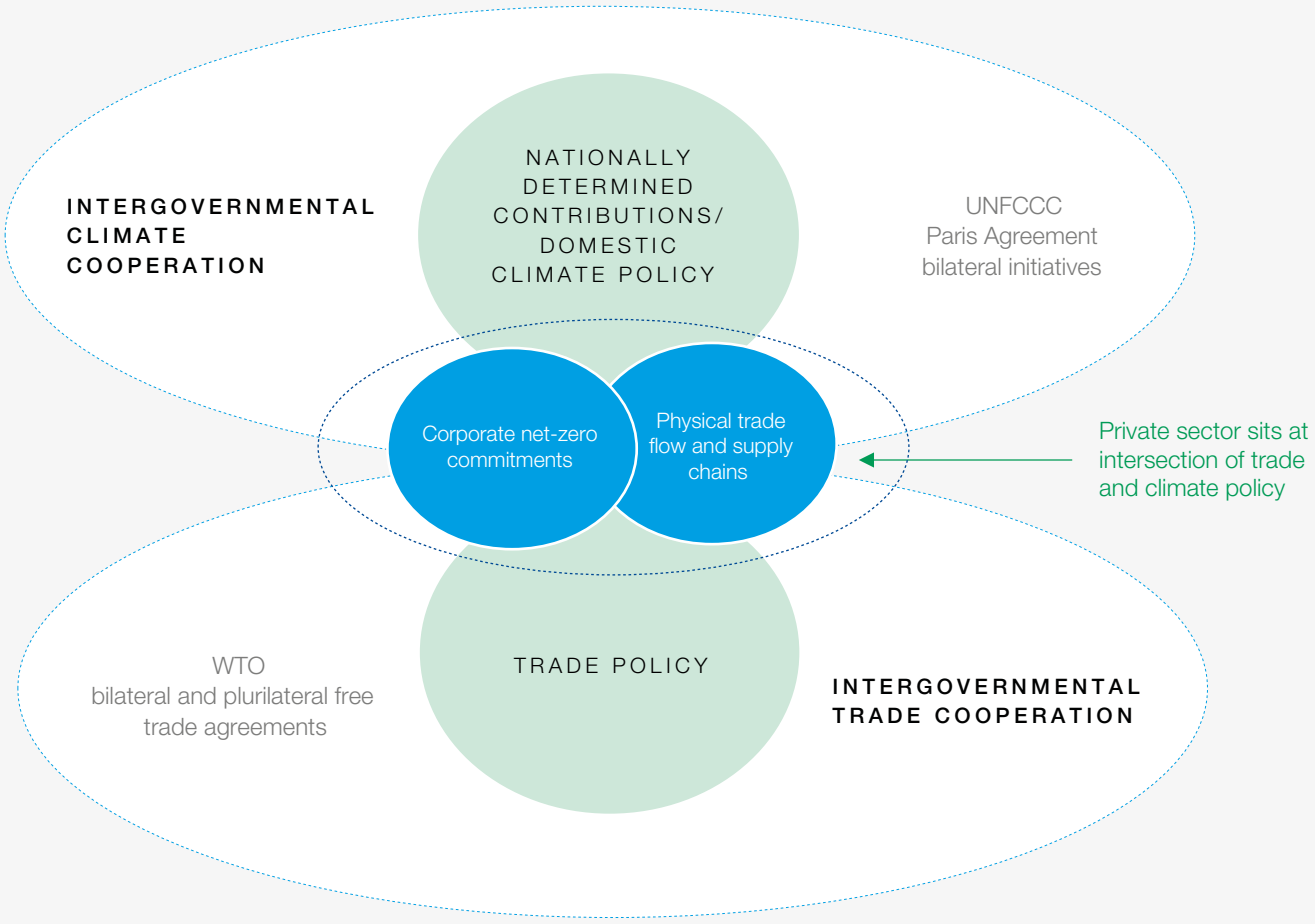
Overcoming these hurdles will be of critical and increasing importance, with global food trade growing significantly in recent years (at an annual rate of 6%), and agriculture accounting for around 11% of global emissions (with land use change likely to increase this figure).[43] Agriculture has an important development aspect, too, given that several large developing countries are among the world's top 10 exporters (including Brazil, China, India, Indonesia, Mexico and Thailand), and agricultural exports are also significant for many of the least-developed countries.[44]

3.2 Level playing field concerns may grow

The Paris Agreement focuses on capping national emissions but pays limited attention to the impact and role of emissions embedded in traded goods (which differs from the attention it gives to *emissions trading*). That creates complications for two reasons:

- As countries move at different speeds towards decarbonization, the failure to account for carbon embedded in traded goods risks becoming a barrier to enhanced climate ambition – particularly in high-emission and trade-exposed sectors such as steel, aluminum, cement, energy, mining and agriculture, where climate ambition is both politically challenging and environmentally critical. Many companies interviewed mentioned potential "level playing field" concerns due to competition from products produced in foreign jurisdictions with lower emissions reduction targets. Conversely, almost all companies interviewed viewed as a priority the introduction of more ambitious nationally determined commitments (NDCs) as a way of reducing the level playing field risk.
- The varying ambition of carbon-pricing or emissions-reduction policies between countries (or the absence of comprehensive carbon-pricing policies) can dull the effectiveness of price signals across international supply chains, and act as a brake on businesses' efforts to implement and accelerate their decarbonization strategies.

FIGURE 3 | **Relationship between the private sector and international trade and climate policy**



Source: Clifford Chance, World Economic Forum

The status quo falls short, and there is a growing risk that there will be a "collision" between the trade and climate worlds.[45] In the short to medium term, whether this collision can be avoided may depend on the extent to which governments base border carbon adjustments, or other mechanisms to level the playing field, on methods for measuring embedded carbon in traded goods that are transparent, non-discriminatory and sufficiently flexible to evolve over time. In particular, these policies must respond to developments including the evolution of similar mechanisms by other economies, the identification of challenges in implementation and the development of international consensus on methodologies for such measures. If these mechanisms are developed using widely agreed standards for measuring embedded carbon, this is likely to: (a) dramatically reduce the risk of such policies being used to pursue protectionist or other non climate-related objectives; and (b) facilitate compliance with (and minimize distortions arising from) multiple different climate-related trade measures across different countries (e.g. different border adjustment mechanisms using different methods).

Signs of divergence are nonetheless emerging, though we are still at an early stage. In July 2021, the EU released a detailed proposal for a CBAM (see Box E), followed soon after by a conceptually similar (but radically differently designed) mechanism proposed by US Senator Chris Coons and Congressman Scott Peters (though, at the time of writing, the Coons-Peters proposal remains in the embryonic stages and is not a Biden Administration policy).[46] Other countries such as Canada[47] are also actively exploring similar policies.

The prospect of large economies employing drastically divergent schemes to determine carbon-related import measures presents significant uncertainty for companies with all of the investment-chilling effects that this entails. It also creates difficulties for firms in emerging markets with fewer resources to invest in reporting and compliance. In April 2021, Brazil, South Africa, India and China expressed "grave concerns" about CBAM-style policies such as "unilateral carbon border adjustment[s] that are discriminatory and against the principles of equity and [common but differentiated responsibilities and respective capabilities]".[48]

BOX G | What's in a CBAM?

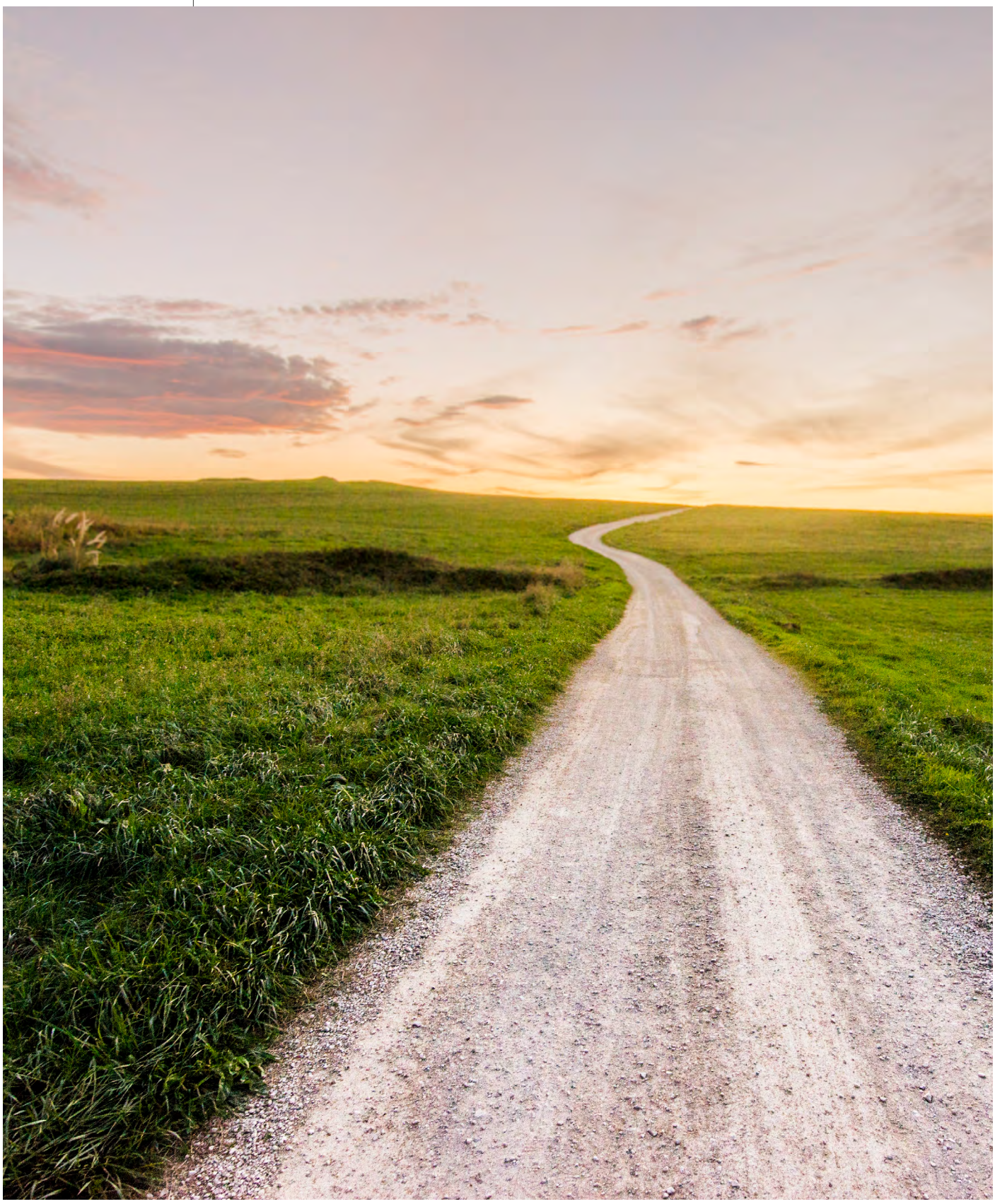
The European Commission included the proposed Carbon Border Adjustment Mechanism (CBAM) as part of a proposed suite of measures in its "Fit for 55" climate and energy package unveiled on 14 July 2021. The package is designed to help the EU achieve a target of reducing emissions by net 55% by 2030 (compared with 1990 levels) and to become climate-neutral by 2050.

The CBAM targets concerns about carbon leakage, whereby heavy industry activity moves abroad to jurisdictions with less stringent emissions targets and which are importing cheaper, and more carbon-intensive, products. The bloc has debated the topic for several years and currently grants free emissions allowances to sectors at risk of carbon leakage. Free allocation has been criticized, however, for not providing clear signals to industry to invest in decarbonization.

The proposed CBAM would set a carbon price on certain imports, while a separate proposal to reform the EU ETS envisages a gradual phasing out of free emissions allowances. Based on the current text:[49]

- It will apply to goods from the cement, electricity, fertilizer, iron, steel and steel aluminum sectors, with an annex describing specific items and HS codes.
- Importers of goods into the EU will need to submit to a competent member state authority by 31 May of each year a declaration on the amount of GHG emissions embedded in items sold in the bloc during the previous calendar year and CBAM certificates to cover those emissions. Guidance on emissions calculation is set out in another annex and the commission will set default values for cases in which importers are unable to calculate emissions. Only direct emissions (i.e. Scope 1) will be counted. More details will be provided in the implementing acts and the "system boundaries" of what is covered may change over time. Embedded emissions in electricity imports will be determined directly by reference to default values unless the declarant chooses otherwise.
- Importers can claim a reduction on CBAM certificates where they demonstrate that a carbon price has been paid in the country of origin. Further implementing acts will follow on this point.
- A transitional period will start on 1 January 2023, when importers will be required to submit information on the relevant goods (volumes, associated emissions and carbon price in the country of origin) on a quarterly basis. Indirect emissions must also be reported during this period. The full CBAM will come into force on 1 January 2026. Free allocation of EU ETS credits for sectors covered by CBAM will be gradually reduced by 10% to reach zero by 2035. While free allocation is maintained, CBAM will apply only to emissions above the free allocation received by domestic producers, with the calculating methodology also to be determined by implementing acts.

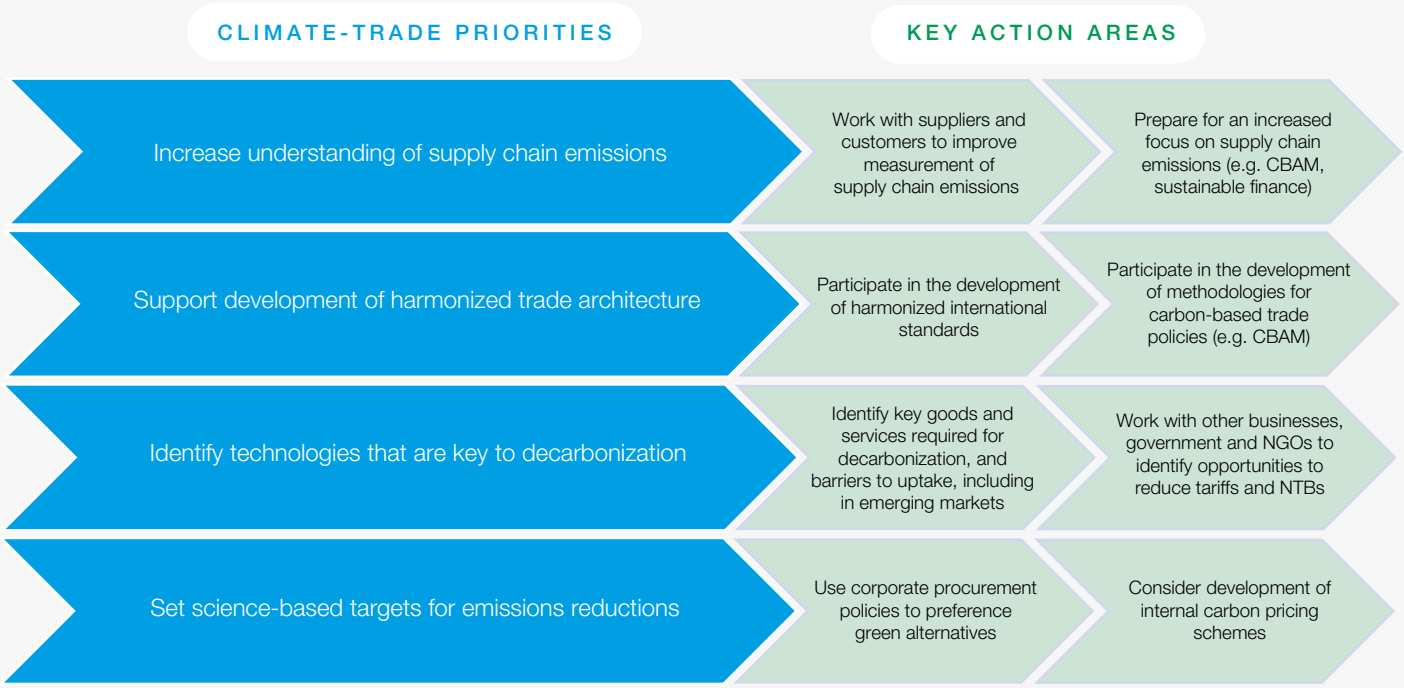
4 Recommended paths forward



The project team puts forward the following proposals for action. These build on views expressed in interviews together with insights from existing research and current international trade relations.

Many of these proposals – such as reducing tariffs on climate-friendly goods, reducing some forms of non-tariff distortions, and phasing out fossil fuel subsidies – build on existing initiatives and can be pursued quickly on a unilateral and plurilateral basis, with the potential to scale up at the multilateral level in the longer term. Other proposals – such as aligning on carbon-based trade policies – are more complex, but help form the foundation for a mutually supportive international system of trade and climate policy.

FIGURE 4 **Opportunities for businesses to prepare for, and support, climate-trade initiatives**



4.1 Reduce tariffs on climate-friendly goods

Some countries are already working towards environmental tariff reductions, such as through the ACCTS negotiations, but there is scope for others to join this or other liberalization initiatives – including through the WTO. As outlined above, there is a significant environmental case for reducing tariffs, with the broader climate benefits of tariff reductions offsetting some "free rider" concerns about making tariff reductions on a "most-favored nation" basis without full reciprocity from all WTO members. Countries should create a living list of climate-friendly goods and develop open architecture that others can join as appropriate. To support these efforts, businesses can further identify and quantify essential technologies and inputs critical for decarbonization. This could be done on a sectoral basis. Researchers can also provide support by modelling the impact of tariff rate reductions and helping stakeholders to understand developing country interests and opportunities.[50]

4.2 Reduce non-tariff distortions

There is a need to grow the evidence base to demonstrate how reducing non-tariff barriers and alleviating divergence in key standards can support climate-related goals. Businesses have a vital role to play in identifying areas in which diverging standards are holding back climate-preferential trade and investment. One suggestion is for businesses and researchers to work together on a database of "green NTBs" to be prioritized for resolution based on the opportunities they provide to reduce emissions through dissemination of essential technologies. The work could include a special focus on the relationship between NTBs and green jobs given

the interest of all economies in generating new opportunities following the pandemic. Public-private dialogue can provide a mechanism to share insights, track new developments and prioritize measures for trade policy cooperation.

Policy-makers can explore opportunities to supplement or build upon trade rules and standards (see Box G) in a way that encourages work to be undertaken on standards in other forums. While intergovernmental trade bodies are generally not the right place to set industry standards, they can provide a forum for developing guiding principles and ensuring standards do not act as a disguised form of trade protection. For example, efforts are already under way through the ACCTS negotiations to develop guidelines for voluntary eco-labelling mechanisms to promote application, quality and transparency. Such approaches can help incentivize the uptake of greener production methods through the supply chain – by transmitting preferences (and in some cases, price premiums) for greener products throughout the supply chain.

BOX H

Trade rules and standards

Trade policy-makers have mechanisms to deal with regulatory and standards divergence through multilateral, plurilateral and bilateral avenues. The WTO Agreement on Technical Barriers to Trade (TBT Agreement) imposes baseline rules for technical regulations (mandatory product-related requirements), while less stringent requirements are also set in relation to voluntary standards and other tools. Importantly, these rules require WTO members not to use technical regulations in a way that discriminates between "like" foreign and domestic products or impose "unnecessary obstacles to international trade". The TBT Agreement also encourages the use of "relevant" international standards.

FTAs and other cooperation, equivalence or mutual recognition agreements equally provide opportunities to address specific NTBs – including in relation to green goods. This includes the use of sectoral annexes for specific products, and the establishment of transparency and cooperation mechanisms to minimize the trade impacts of regulations and standards.[51]

An issue of particular relevance in the context of climate-related NTBs is the extent to which products that are otherwise "like" are permitted to be subject to differential treatment based on so-called "non product-related processes and production methods" (or NPPMs). NPPMs refer to processes or production methods that do not result in observable differences in the finished product – such as the embedded emissions in a product, or whether the product was produced using sustainable methods. While measures based on NPPMs are not in themselves prohibited by WTO rules, the WTO Appellate Body has generally found that "likeness" is to be determined based on the competitive economic relationship between products in the marketplace. Accordingly, in some circumstances, measures that differentiate between products based on NPPMs may not be consistent with obligations under the TBT Agreement or General Agreement on Tariffs and Trade 1994 (GATT) (or may need to be justified on sometimes narrow public policy exceptions). Some experts have expressed concern that this uncertainty may create difficulties for governments in introducing certain types of measures designed to incentivize lower-carbon products.

Some of the examples cited in this report relate to traditional issues of regulatory divergence between markets, while others are more closely linked to NPPMs. The recent Comprehensive Economic Partnership Agreement (CEPA) between European Free Trade Association (EFTA) states and Indonesia includes interesting developments regarding NPPMs and sustainability. Switzerland has agreed to a 20–40% tariff reduction up to a set quota based on compliance with an international private sector-led sustainability standard. The regional deal paves the way for this conditionality in Article 8.10, which states that all vegetable oils and derivatives traded between the parties must be done in accordance with "laws, policies and practices aiming at protecting forests".[52] Although the provision materially affects a small volume of Indonesia's palm oil exports, and may have other drawbacks, it is an innovative policy approach.

4.3 Phase out fossil fuel subsidies

Businesses can work to encourage policy-maker engagement in ongoing initiatives[53] to eliminate harmful fossil fuel subsidies and to provide insights into energy market impacts, including bridging strategies for industries where technology does not yet offer viable fossil fuel alternatives. While G7 leaders committed in 2016 to the elimination of inefficient fossil fuel subsidies and encouraged "all countries to do so by 2025",[54] fossil fuel subsidies remain a significant distortion that slow decarbonization. Interested policy-makers could consider establishing structured dialogues between trade and energy or transport ministers.

4.4 Align on carbon-based trade policies

Corporate emissions accounting – particularly Scope 3 accounting – is often voluntary and there is divergence in accounting frameworks. Yet emissions accounting is increasingly intersecting with trade-related policies – such as Border Carbon Adjustments (BCAs) or climate-friendly labels. Stakeholders interviewed were keen to see policy-makers engage in dialogue on how emissions accounting standards and related policies operate in this context. This work may provide a platform for trade policy-makers to explore "foundational principles" for BCAs, to ensure consistency and coherence of these policies across different jurisdictions. These conversations could take place in a range of forums, though maximum impact would be achieved if conversations were conducted at a plurilateral or multilateral level – including through institutions such as the OECD, the Asia-Pacific Economic Cooperation (APEC), the UNFCCC and the WTO.

4.5 Unpack digital and services-related trade

While interviews highlighted the vital role that digital technologies, data flows and services will play in transitioning to a low-carbon economy, they did not identify broadly applicable barriers to trade in climate-related services. Given the constantly evolving nature of services trade, further public-private dialogue in this area can help identify key barriers to dissemination of these services. Examples of digital technology applied across borders and reliance on data flows can also help build the evidence base for digital trade rules.

4.6 Address climate-smart agriculture

Agriculture remains one of the most sensitive issues for many WTO members. Yet the sector's high and rising emissions profile and its economic importance to developing countries means that it is more important than ever for agriculture to be included as part of a broader discussion on trade and the environment. This focus could include:

1. Identifying goods and services that are critical to reducing agriculture emissions to allow these to be targeted for liberalization.
2. Driving conversation about the role of supply-chain policies and practices to enable smallholder farmers to shift agriculture practices in an equitable and sustainable manner. Aspects of the Forest, Agriculture and Commodity Trade (FACT) Dialogue[55] hosted by the COP26 Presidency could be taken forward in part by the trade community for this purpose.
3. Identifying opportunities to reduce or eliminate subsidies that incentivize overproduction or consumption of higher-emissions food products.

4.7 Harness trade agreements to achieve climate action

The scope of matters covered by trade agreements has expanded over time to account for a wide range of emerging issues of importance to governments and businesses. The critical importance of climate change for all businesses, and all aspects of public policy, now means that trade agreements should also include ambitious, binding and enforceable commitments on climate change. Recent agreements such as the EU-UK Trade and Cooperation Agreement – which makes respecting the Paris Agreement an essential element of the agreement and includes a range of specific climate-related commitments – provides one example of how broader climate objectives can be expressly linked to trade objectives.

4.8 Facilitate green investment

Negotiations are ongoing among more than 100 WTO members for a plurilateral deal on Investment Facilitation for Development (IFD). Many interviewees signalled the importance of public-sector interventions to stimulate green investment. The WTO's IFD talks will not be able to address all potential issues, given that the remit is to focus on facilitation, but it is a good place to start in understanding whether implementation can help improve investment flows to emerging economies. That will be particularly important as foreign investment has stalled in the wake of COVID-19 and other geopolitical developments, with developing countries hit the hardest. From a facilitation agenda, other WTO members could eventually look at whether additional green FDI guidelines or commitments are needed to stimulate these flows or improve investment market access at the bilateral or plurilateral level.

Examples of current policy and actions

Examples of actions to date As of August 2021	Unilateral	Bilateral or regional	Global
Pathway			
Tariff reduction	Some countries have unilaterally lowered tariffs on a list of specified environmental goods	Tariff reductions on key goods in select FTAs (and through initiatives such as ACCTS, and commitments by APEC Members to reduce tariffs on environmental goods)	⊗
Reduce non-tariff distortions	⊗	NTB and regulatory cooperation chapters in FTAs, equivalence or mutual recognition agreements. Specific efforts on voluntary eco-labelling in the ACCTS	Relevant rules at the WTO, but could be further bolstered to help on climate-specific issues
Phase out fossil fuel subsidies	G20 voluntary peer reviews via the OECD of fossil fuel subsidies	Ongoing ACCTS negotiations	⊗
Align on carbon-based trade polices	The EU and a number of countries are considering carbon border adjustment policies	⊗	⊗
Unpack digital and services-related trade	⊗	FTAs addressing digital trade and services liberalization, limited concentrated effort on climate-related services	Ongoing negotiations for an e-commerce agreement that may address data flow commitments
Address climate-smart agriculture	Individual country policies	⊗	⊗
Harness trade agreements to achieve climate action	⊗	Express linkages between trade and climate commitments in FTAs (e.g. EU-UK TCA), ongoing negotiations for the ACCTS	⊗
Facilitate green investment	Country incentives	Bilateral and plurilateral investment market access agreements	Ongoing negotiations for an IFD Agreement

5 Conclusion

These paths forward provide a basis for further exploration, dialogue and action. The World Economic Forum will run a Climate Trade Zero work programme over the coming two years to facilitate public-private exchange and, critically, work to bridge the divide between trade and environmental communities. For example, some interviewees mentioned the importance of recognizing the Paris Agreement and climate-related trade commitments as integral and enforceable elements of FTAs. This reflects the sentiment that global economic policy must be put to the service of climate action. Others were keen to see more emphasis in trade cooperation on capacity-building. That could include helping developing economies to better understand decarbonization pathways, and the investments required, as well as exploring how supply chain participation can help with the uptake of new technologies, among other ideas.

Overall, businesses have signalled that they are ready and willing to accelerate their decarbonization efforts. To support these efforts, interviewees wanted to ensure that governments' trade-related climate responses are based on transparent, open and non-discriminatory approaches, with the flexibility to respond to changed circumstances and leave open pathways for consensus. Unilateral and plurilateral mechanisms can play an important role in spurring action, driving ambition and developing innovative solutions to trade-related climate challenges (see Table above). It is important that these initiatives are designed to be trade-facilitating and maintain coherence with international trade and environmental law principles as practices evolve.

Glossary

ACCTS – Agreement on Climate Change, Trade and Sustainability

APEC – Asia-Pacific Economic Cooperation

BCA – Border carbon adjustments

CBAM – Carbon border adjustment mechanism

CCUS – Carbon capture, use and storage

COP26 – 26th session of the Conference of the Parties to the UNFCCC

EGA – Environmental Goods Agreement

EVs – Electric vehicles

GATT – General Agreement on Tariffs and Trade 1994

HS – Harmonized Commodity Classification and Coding System

IEA – International Energy Agency

IPCC – Intergovernmental Panel on Climate Change

LCR – Local content requirements

MC12 – Twelfth Ministerial Conference of the World Trade Organization

NPPMs – Non product-related processes and production methods

NTBs – Non-tariff barriers

OECD – Organisation for Economic Co-operation and Development

SAFs – Sustainable aviation fuels

TBT Agreement – WTO Agreement on Technical Barriers to Trade

TESSD – WTO Trade and Environmental Sustainability Structure Discussions

UNFCCC – United Nations Framework Convention on Climate Change

WTO – World Trade Organization

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Executive Director, European Roundtable on Climate Change and Sustainable Transition

Ronald Steenblik
Senior Fellow, International Institute for Sustainable Development (IISD)

Additional business contributions from, among others:

– Anheuser-Busch InBev

– Deutsche Post DHL Group

– Dow

– Ezaki Glico

– Hero MotoCorp

– NLMK Group

– ScottishPower

– Trafigura

– UPS

– Vale

Endnotes

1. IPCC Report, *UN Secretary-General Describes Climate Crisis as "Code Red for Humanity"*: available here (link as of 17/8/21).
2. At the June 2021 G7 Summit, leaders committed to reach net-zero emissions no later than 2050 and to halve G7 countries' collective emissions by 2030 compared with 2010 levels. It marked the most ambitious coordinated agreement among the world's largest developed economies to curb their carbon emissions to date. The G20 energy and climate ministers meeting in July 2021, meanwhile, affirmed commitments to update nationally determined commitments (NDCs) under the Paris Agreement – building further on updated NDCs published by several G20 members in 2020 and 2021. The group also recognized that the impacts of climate change at a 1.5ºC rise are "much lower" than at 2ºC.
3. Energy and Climate Intelligence Unit, *Taking Stock: A Global Assessment of Net Zero Targets*, 2021: available here (link as of 17/8/21).
4. UNFCCC, *Commitments to Net Zero Double in Less Than a Year* [press release], 21 September 2020: available here (link as of 17/8/21).
5. There are several studies that do so. In 2008 the World Bank found tariff removal led to a 7% increase in the volume of clean energy technology trade and a 14% increase when combined with tackling non-tariff barriers. For more, see The World Bank, *International Trade and Climate Change: Economic, Legal and Institutional Perspectives*, 2008: available here. A more recent study in 2020 by the Swedish National Board of Trade calculated that zero tariffs on electric vehicles would increase imports to the EU by around 10%. That figure would likely expand as demand for EVs increases. For more, see Swedish National Board of Trade, *Trade Barriers to Goods and Services Important for Climate Action – and Opportunities for Reform*, 2020: available here (links as of 17/8/21).
6. A study in 2009 examined the greenhouse gas emission impacts of liberalization on select lists of environmental goods. It concluded that tariff removal on renewables could marginally lower electricity generation costs and, if contributing to increased use, could lead to emissions savings of between 45 million and 325 million tonnes of carbon dioxide ($MtCO_2$) a year. The authors cautioned that the direct tariff removal effect on emissions is small, yet goods include only those pertaining to electricity generation based on renewable energy, rather than the wide range of technologies needed to decarbonize across the economy. The estimate is also subject to considerable uncertainty as the uptake of renewables depends on other policies and measures in place. For more, see Wooders, Peter, *Greenhouse Gas Emission Impacts of Liberalizing Trade in Environmental Goods*, International Institute for Sustainable Development, 2009: available here. An impact assessment of the EGA negotiations undertaken in 2016 found that tariff reductions on the power sector's energy mix in 53 economies could lead to a global abatement of 10 MtCO2 by 2030. For more, see European Commission, Trade Sustainability Impact Assessment on the Environmental Goods Agreement, 2016: available here (links as of 18/8/21).
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8. Office of the United States Trade Representative, *President Trump Approves Relief for US Washing Machine and Solar Cell Manufacturers* [press release], 2018: available here (link as of 17/8/21).
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11. World Economic Forum, *Supercharging Public-Private Efforts in the Race to Net-Zero and Climate Resilience*, Agenda, 21 June 2021: available here (link as of 17/8/21).
12. Steenblik, Ronald, *Code Shift: The Environmental Significance of the 2022 Amendments to the Harmonized System*, International Institute for Sustainable Development, 2020: available here (link as of 25/8/21).
13. Ritchie, Hannah, *Sector by Sector: Where Do Global Greenhouse Gas Emissions Come From?* September 2020: available here (link as of 17/8/21).
14. International Energy Agency, *Energy Technology Perspectives*, 2020: available here (link as of 17/8/21).
15. Hydrogen, a highly flammable gas, can be burned or converted to produce no harmful emissions. It can be produced in various ways, some of which are more or less emissions-intensive, though most hydrogen production today comes from fossil fuel sources. Low-carbon hydrogen (produced without fossil fuels) and "green hydrogen" (produced from renewable energy) currently account for about 1% of global hydrogen supply, with different pathways to scale. Thomas, Nathalie, David Sheppard and Neil Hume, *The Race to Scale Up Green Hydrogen*, Financial Times, 8 March 2021: available here; Ouziel, Sylvie and Luiz Avelar, 4 *Technologies that Are Accelerating the Green Hydrogen Revolution*, World Economic Forum, Agenda, 29 June 2021: available here (links as of 17/8/21).
16. OECD, *OECD Work on Support for Fossil Fuels*: available here (link as of 17/8/21).

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