The Economist INTELLIGENCE UNIT

Climate change and trade agreements
Friends or foes?

A report by The Economist Intelligence Unit

Commissioned by

ICC INTERNATIONAL CHAMBER OF COMMERCE @100 years

ICC WORLD TRADE AGENDA
An initiative in partnership with Qatar Chamber

غرفة قطر
QATAR CHAMBER

Contents

© The Economist Intelligence Unit Limited 2019

Acknowledgements

Climate change and trade agreements: Friends or foes? is an Economist Intelligence Unit (EIU) report that has been commissioned by the International Chamber of Commerce (ICC), as part of the ICC World Trade Agenda, an initiative in partnership with Qatar Chamber of Commerce and Industry. The findings are based on an extensive literature review and interview programme conducted by the EIU between August and December 2018. The EIU bears sole responsibility for the content of this report. The findings and views expressed do not necessarily reflect the views of ICC or Qatar Chamber of Commerce and Industry.

The report was produced by a team of researchers, writers, editors and graphic designers, including:

Conor Griffin – Project director
Diana Hindle Fisher – Project manager
Ailia Haider – Researcher
Kamala Dawar – Contributing researcher
Adam Green – Contributing author
Gareth Owen – Graphic designer

Interviewees
Our thanks are due to the following people for their time and insights:

Professor Petros Mavroidis, Columbia University
Assistant Professor Antonia Eliason, University of Mississippi
André Sapir, Bruegel and Université libre de Bruxelles
Professor Robert Howse, New York University
Mark Sanctuary, IVL Swedish Environmental Research Institute
Professor James Bacchus, University of Central Florida

For any enquiries about the report, please contact:

Diana Hindle Fisher
The Economist Intelligence Unit
London | United Kingdom
E: dianahindlefisher@eiu.com
Tel: + 44 (0)20 7576 8368

© The Economist Intelligence Unit Limited 2019

About the Economist Intelligence Unit

The Economist Intelligence Unit (EIU) is the research arm of The Economist Group, publisher of The Economist. As the world's leading provider of country intelligence, it helps governments, institutions and businesses by providing timely, reliable and impartial analysis of economic and development strategies. Through its public policy practice, the EIU provides evidence-based research for policymakers and stakeholders seeking measureable outcomes, in fields ranging from gender and finance to energy and technology. It conducts research through interviews, regulatory analysis, quantitative modelling and forecasting, and displays the results via interactive data visualisation tools. Through a global network of more than 650 analysts and contributors, the EIU continuously assesses and forecasts political, economic and business conditions in more than 200 countries.

For more information, visit www.eiu.com

About The International Chamber of Commerce (ICC)

The International Chamber of Commerce (ICC) is the world's largest business organization representing more than 45 million companies in over 100 countries. ICC's core mission is to make business work for everyone, every day, everywhere. Through a unique mix of advocacy, solutions and standard setting, we promote international trade, responsible business conduct and a global approach to regulation, in addition to providing market-leading dispute resolution services. Our members include many of the world's leading companies, SMEs, business associations and local chambers of commerce.

www.iccwbo.org Follow us on Twitter: @iccwbo

About the ICC World Trade Agenda

The ICC World Trade Agenda is an initiative designed to enable global business leaders to define multilateral trade negotiation priorities and to help governments set a trade and investment policy agenda for the 21st century that contributes to sustainable economic growth and job creation. The initiative actively promotes a robust post-Nairobi trade and investment policy agenda in relevant forums, including the Business 20 and G20 discussions, and in particular at the WTO in the lead-up to and during its next Ministerial Conference.

About Qatar Chamber of Commerce and Industry

Qatar Chamber is a strategic partner of the ICC Business World Trade Agenda initiative. It is dedicated to promoting Qatar's burgeoning economy and assuring that the interests of the business community are well represented. By providing key support services, networking opportunities and leadership, the chamber has helped oversee one of the most dynamic and fastest-growing economies in the world.

© The Economist Intelligence Unit Limited 2019

List of abbreviations

°C	Degree Celsius
CAT	Climate Action Tracker
CETA	Comprehensive Economic and Trade Agreement
CO_2	Carbon dioxide
COP	Conference of the Parties
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CTE	Committee on Trade and Environment
ECT	Energy Charter Treaty
EGA	Environmental Goods Agreement
ETS	Emission trading scheme
FTA	Free trade agreement
FiT	Feed-in-tariff
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GHG	Greenhouse gas
HS codes	Harmonized System code
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ISDS	Investor-state dispute settlement
KAFTA	Korea-Australia Free Trade Agreement
MEA	Multilateral environmental agreement
MMPA	Marine Mammal Protection Act
$MtCO_2e$	Metric tons of carbon dioxide equivalent
NAAEC	North American Agreement on Environmental Cooperation
NAFTA	North American Free Trade Agreement
NDC	Nationally Determined Contributions
NTB	Non-tariff barrier
OECD	Organisation for Economic Co-operation and Development
PPM	Producing and Processing methods
PV cells	Photovoltaic cells
SCM	Subsidies and Countervailing Measures
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organization

© The Economist Intelligence Unit Limited 2019

EXECUTIVE SUMMARY

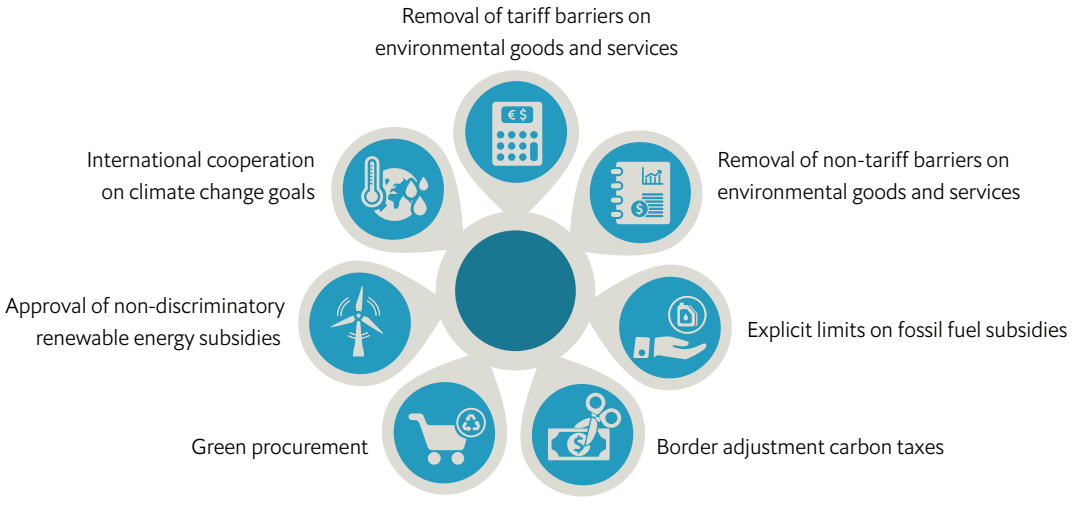
The Intergovernmental Panel on Climate Change (IPCC) has shone a spotlight on the devastating humanitarian consequences the world can expect if global warming exceeds 1.5°C. Despite the 2015 Paris Agreement, most countries' climate policies show a chronic lack of ambition and the world remains on track for temperature increases of more than 3°C.

Against this backdrop, the world needs transformative solutions. In climate policy discussions, relatively little attention is paid to the global trade architecture. Bilateral, regional or World Trade Organisation (WTO) trade agreements could help to meet climate goals—for example, by removing tariffs and harmonising standards on environmental goods and services, and eliminating distortionary and poorly designed subsidies on fossil fuels and agriculture.

Despite the potential for trade–climate synergies, the weight of historical evidence is heavy in the other direction. Universal tariff reduction has increased trade in carbon-intensive and environmentally destructive products, such as fossil fuels and timber, more than it has for environmental goods. In some cases FTAs can also shrink the "policy space" available to countries to pursue environmental goals, for example if they prohibit, or are perceived to prohibit, a country's ability to distinguish between products according to emissions released during their production.

This report assesses the degree to which the WTO and four contemporary free trade agreements (FTAs)—CPTPP, EU–Singapore, EU–Canada and Korea–Australia—support seven opportunities for boosting climate-friendly trade flows (see graphic below).

Scope for change
Seven opportunities for boosting climate-friendly trade flows



Source: The Economist Intelligence Unit.

We find that the four contemporary trade agreements are more supportive of these climate goals than their traditional counterparts. For example, the EU-Singapore FTA recognises the need for parties

© The Economist Intelligence Unit Limited 2019

take *"proper account"* of the need to reduce GHG emissions when designing subsidy systems. The CETA and CPTPP agreements permit parties to promote environmental standards and objectives in their tender specifications. However, overall, the agreements largely fail to support the seven opportunities. Most clauses are based on cooperation, consultation, and best endeavour. Specific or immediate actions are lacking. Transformative policies, such as border adjustment carbon taxes, are largely ignored.

We also find that the WTO's efforts to pursue climate and environmental goals have largely stalled and its cooperation with international climate policy actors is limited. Post-Paris there is a real concern that ambitious climate policies will fall foul of WTO rules if they are perceived to arbitrarily or unjustifiably discriminate against third countries.

We conclude our report with recommendations for domestic and global policymakers. These include transmitting and strengthening best practices from recent trade agreements and increasing WTO–UNFCCC (United Nations Framework Convention on Climate Change) cooperation. To truly align the global climate and trade architecture, we recommend discussing the introduction of a "climate waiver" that would permit countries to impose trade-restrictive climate policy response measures that are in line with Paris Agreement obligations.

© The Economist Intelligence Unit Limited 2019

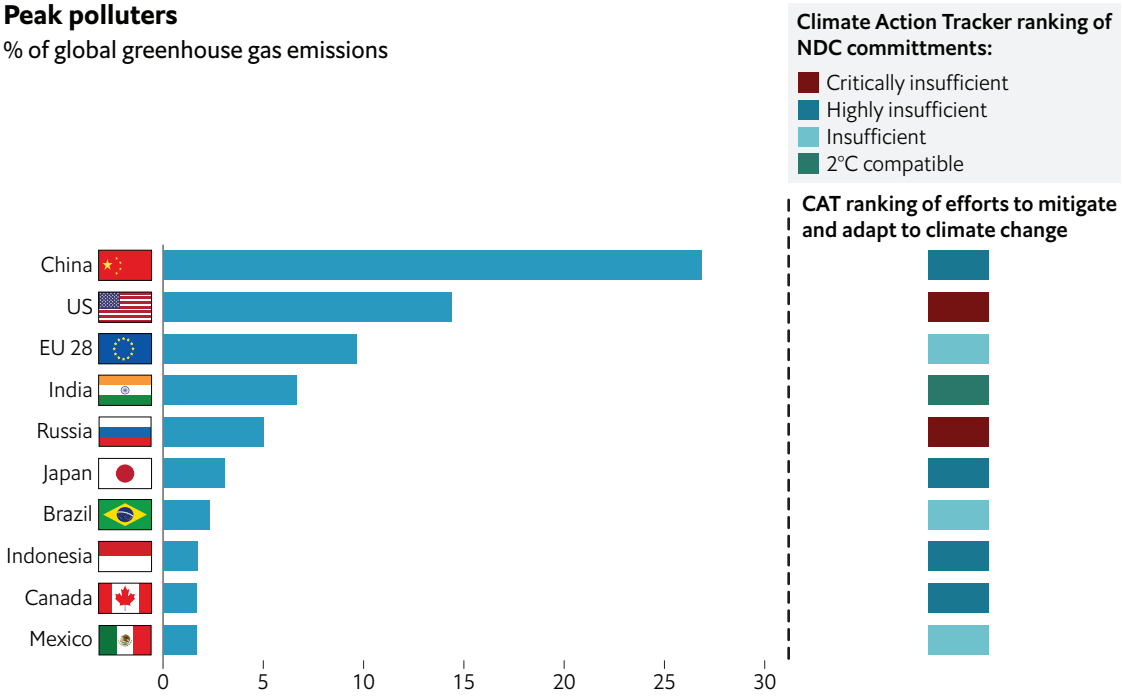
Introduction

The 2015 Paris Agreement aims to limit global warming to "well below" 2°C above pre-industrial levels and, if possible, to below 1.5°C.[1] At the heart of the agreement is the concept of Nationally Determined Contributions (NDCs), which set out each country's policies and targets to *mitigate* and *adapt to* climate change. While not legally binding, NDCs aim to boost transparency and build positive momentum through constructive "peer pressure".

Falling short, badly

The Paris deal requires each party to submit successive NDCs to the UNFCCC secretariat every five years. As of January 2019, 184 of the now 197 signatories have ratified the Paris Agreement[2], 181 have submitted their first NDCs and one has submitted its second set of NDCs.[3] Taken together, the parties that have submitted NDCs account for almost 97% of global emissions.[4] If these parties meet both their conditional and unconditional NDC pledges, emissions of CO_2 equivalent will be 11.4 gigatons lower than under a no policy approach.[5]

Peak polluters
% of global greenhouse gas emissions



Source: World Resources Institute (WRI), Climate Action Tracker (CAT).

While the Paris Agreement was an important step in climate multilateralism, the NDCs are far too modest to meet climatic needs. The primary reason is a lack of ambition and commitment from the world's largest emitters of greenhouse gases (GHGs). The EU member states' collective NDC aims to reduce domestic emissions by 40% by 2030 compared with 1990 levels, and to boost renewable energy's share of energy consumption to 32% (it was 17% in 2016).[6] Climate Action Tracker (CAT), a group that monitors government climate action,[7] believes that these goals fall well short of what is

© The Economist Intelligence Unit Limited 2019

realistically achievable. CAT claims that the EU28 could reduce emissions by 62% by following best practices, and rates the bloc's NDC commitments as "insufficient" to hold warming below 2°C.[8]

The US originally committed to reduce GHG emissions to 26–28% below 2005 levels by 2025. However, the Trump administration subsequently communicated its "intent to withdraw" from the Paris Agreement, prompting a rating of "critically insufficient" by CAT. Russia has signed but not ratified the Paris Agreement, and its NDC targets are so weak that they do not require any reduction in emissions from current levels. Rather, Russia is on track for emissions growth of 18–25% by 2030. Australia fares little better. Its emissions are set to considerably exceed its NDC target owing to the country's heavy coal use. CAT claims that if all countries took Australia's approach, global warming could reach up to 4°C.[9]

China has committed to increasing the share of non-fossil fuels in its primary energy supply to around 20% by 2030, a 7–8 times increase from 2005, and to lower the carbon intensity of GDP by 60–65% below 2005 levels.[10] While China is on track to meet those targets, CAT rates the commitments as "highly insufficient" owing to their lack of ambition. Moreover, in 2017, China's coal consumption rose, after declining between 2014 and 2016, raising concerns about the trajectory of future emissions.[11]

CAT also rates Japan's NDC goal of a 26% emissions reduction from 2013 levels by 2030 as "highly insufficient" and is critical of the country's coal plant construction plans and lack of renewable electricity targets.[12] Other laggards include Saudi Arabia, which has committed to an annual abatement of up to 130m tonnes of CO_2 equivalent ($MtCO_2e$) by 2030. However, the target has no baseline reference and the government reserves the right to adjust it if the target creates an "abnormal burden" on the economy. In December 2017, Riyadh announced a slowdown in its plans to phase out fossil fuel subsidies.[13]

More positively, India's NDC targets include an emissions reduction of 33–35% by 2030 compared with 2005 levels, and an increase in the share of non-fossil-fuel-based energy to 40% by 2030, earning it a rating of "2°C-compatible" by CAT. Indeed, if India abandons plans to build new coal-fired power plants, curtails the expansion of fossil fuel production and fully implements its Draft Electricity Plan, it could achieve the 40% target a decade earlier.

A ticking clock

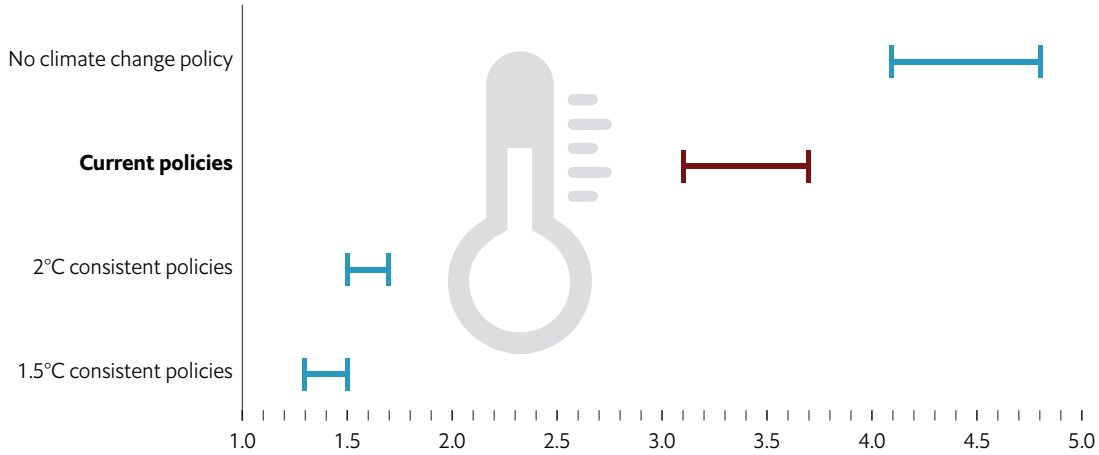
In October 2018, the IPCC released a 1,200-page report that was as extensive as it was sobering.[14] The report poured cold water on hopes that limiting global warming to well below to 2°C would be manageable. Comparing the effects of a 2°C increase with a 1.5°C increase, the authors concluded that a 2°C increase would wipe out 99% of the world's coral reefs, rather than 70–90%, and double the number of plant and vertebrate species that would lose their habitats. A 2°C increase would also expose 420m more people to record heat and several hundred million more to climate poverty. It would set in motion a negative feedback loop by thawing permafrost, which would release large amounts of methane gas and further exacerbate warming.

To limit global warming to 1.5°C, the world would need to eliminate all 42bn tonnes of annual carbon emissions by 2050. Renewables, including hydropower, would have at least to treble their share of electricity generation. Internal-combustion engines, which power 499 out of 500 cars on the road today, would have to all but vanish. The economic cost, primarily felt through higher electricity

© The Economist Intelligence Unit Limited 2019

prices, would be 150% higher than in a 2°C world.[15] Owing to the limited ambition of "emission-critical" countries, the NDCs submitted to date fall well short of the efforts needed to achieve such goals. Indeed, a 2017 UN report found that the NDCs, if met, are capable of limiting the forecast temperature increase to only 3.0–3.2°C by 2100 (a previous estimate of 2.7°C was revised up following the US withdrawal).[16]

Turning up the heat
Expected increases in temperature above pre-industrial levels for four policy scenarios



Source: The Economist Intelligence Unit.

Moreover, states are not legally bound to achieve their NDC goals. Continuous monitoring will be needed to ensure that countries hit their modest commitments. Some monitoring mechanisms do exist. Co-chaired by Germany and Morocco, the NDC Partnership is made up of 74 member countries, the EU28 and 35 institutional partners. It will help countries access the technical assistance required to implement their NDCs.[17] In 2018 the Conference of the Parties (COP) also convened a facilitative forum, known as the Talanoa Dialogue, to take stock of the collective progress towards achieving the Paris Agreement's goals and to submit ideas and recommendations to inform the NDCs.[18] However, these entities lack a robust legal mechanism to compel laggards to meet their NDC goals.

Trade and climate: Frenemies?

The modest commitments from emission-critical countries and the withdrawal—explicit or de facto—of key economies such as the US, Australia and Brazil raise grave doubts about whether the current approach to climate diplomacy can sufficiently limit global warming. Given the centrality of trade to economic growth, a pressing question is whether current and future trade agreements will support or hinder NDCs and progress towards the 1.5°C goal. Synergies are critical. According to Laurence Tubiana, France's Special Ambassador to the Paris conference, without coherence between trade agreements and climate policy the world will "go nowhere" on climate goals.[19]

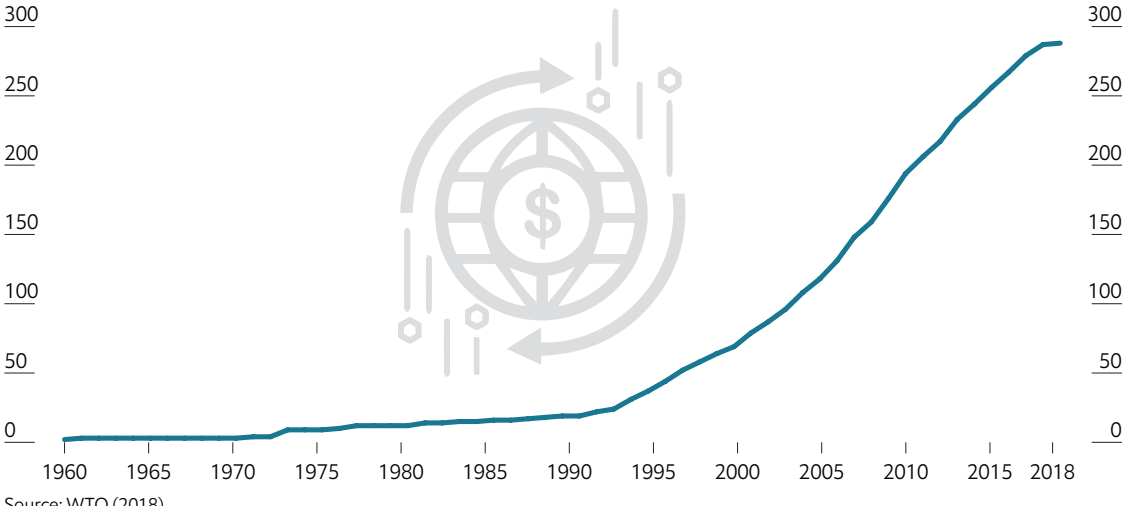
Despite the moribund state of global trade deals, evidenced by the Doha "drift" at the WTO, countries continue to sign pacts on a bilateral or regional basis. Almost 300 such agreements are currently in force.[20] Historically, trade agreements and climate policy have frequently been in

© The Economist Intelligence Unit Limited 2019

opposition, with the latter requiring the kinds of frictions and differentiations that the former try to iron out. However, trade agreements signed over the past decade have incorporated more language and clauses relating to climate goals, potentially ushering in a more supportive relationship between trade and climate change. This report examines whether contemporary FTAs represent a sea change in how trade and climate policy intersect.

On the up

Number of regional trade agreements in force



Source: WTO (2018)

In chapter 1, we summarise how trade and climate policy have historically intersected. In chapter 2, we examine the extent to which the WTO supports the Paris Agreement objectives. Chapter 3 considers the bilateral and regional level and examines the extent to which contemporary trade agreements *support* climate change goals—for example, by easing the flow of environmental goods and services. We conclude the report with recommendations for trade and climate policymakers.

© The Economist Intelligence Unit Limited 2019

1. TRADE AGREEMENTS AND CLIMATE CHANGE: FROM NAFTA TO KAFTA

Analysis of the impact of trade agreements on environmental goals dates back to the early 1990s. At the time, trade liberalisation was surging alongside a broad uptick in globalisation, as the Soviet Union disintegrated and a technological revolution cut the cost of transport and communication across borders. After the US, Canada and Mexico signed the North American Free Trade Agreement (NAFTA) in 1992, Grossman and Krueger identified three "mechanisms of action" through which trade agreements could *indirectly* affect environmental outcomes:[21]

- *Scale effects*: Liberalisation typically increases trade flows by sea, air and land, as well as boosting broader economic activity. In a business-as-usual scenario, this will increase resource depletion, pollution and emissions (shipping alone accounts for 2–3% of global GHGs).[22] Most evaluations of trade agreements support the Grossman–Krueger hypothesis.[23]
- *Composition effects*: Trade agreements encourage nations to specialise according to their comparative advantage, which may be more or less emission-intensive. For instance, manufacturing in Malaysia is twice as carbon-intensive, and in Vietnam six times as carbon-intensive, as in the US.[24] If trade agreements shift production to more polluting geographies, global emissions will increase.[25]
- *Technique effects*: Emissions and pollution may fall if trade liberalisation encourages multinational corporations to transfer cleaner technologies to developing countries. But technique effects can also be climate-negative—for example, if natural gas exports or fossil fuel extraction increase owing to the diffusion of hydraulic fracturing technology or innovative oil exploration machinery.[26]

Searching for synergies …

The Grossman–Krueger model was concerned with the indirect effects of trade agreements on environmental outcomes. However, trade provisions can also *directly* help or hinder environment and climate goals. Photovoltaic (PV) cells "made in China" are produced with equipment and component parts from Germany, Switzerland and the US, among other countries.[27] By removing tariffs and harmonising standards, trade agreements can help renewables companies access more competitive suppliers and tap the skills, capital and finance they need to expand. For consumers, trade agreements can lower the costs of green products, from solar panels to electric vehicles, thereby boosting demand.

Trade agreements may also eliminate distortionary subsidies on fossil fuels or, where poorly designed, agriculture, both of which could encourage greener economic growth models. Open borders can also help the type of regional integration—such as the pooling of electricity markets in parts of Sub-Saharan Africa—that can result in more efficient use of resources. Trade deals also provide a platform to formalise efforts to eliminate destructive trade-related malpractices, such as illegal logging and fishing.

… but finding conflicts

Notwithstanding the potential for trade–climate synergies, the weight of evidence is heavy in the other direction. Universal tariff reduction increases trade in carbon-intensive and environmentally

© The Economist Intelligence Unit Limited 2019

destructive products, such as fossil fuels, as easily as it does in solar panels and electric vehicles. Trade agreements can also shrink the "policy space" available to countries to tackle climate change, a subject that is especially relevant in the post-Paris world. Future climate policies such as import bans on environmentally damaging products and border taxes on carbon-intensive products could be challenged if they are deemed to discriminate on unjustifiable grounds or to be a disguised restriction on international trade[28]. In NDCs published to date, various countries have announced policies that could lead—and in some cases have led—to trade disputes for violating principles such as non-discrimination or open borders (see table, below).

At odds

NDC provisions that may conflict with free trade agreements

Policy domain	in NDC	Country
Tax	Carbon taxes	Brunei Darussalam
	Tax reductions for energy efficient appliances	Armenia, Chile, India, South Africa
Import bans	Vehicles older than 3 years	Gabonese Republic
	Incandescent bulbs and inefficient devices	Venezuela
Subsidies	Renewables energy	Burkina Faso, Guatemala
	Retrofits	Rwanda
	Removal of fossil fuel subsidies	Ethiopia, Ghana
Market-based mechanisms	Introduction or expansion of domestic carbon emissions trading schemes	China, Costa Rica, Dominica, Egypt, Gabon
Green procurement	Greening public transport to improve fuel efficiency or encourage alternative fuels	Costa Rica, Monaco, UAE

Source: The Economist Intelligence Unit.

Trade–climate policy conflicts are not hypothetical. Canadian trade officials opposed an EU effort to label tar sands as a "highly polluting" energy source in its Fuel Quality Directive rules (the classification was eventually dropped). The US lambasted an EU definition of renewables that restricted US exports of soybeans as a biofuel feedstock as a "barrier to trade".[29] Governments have invoked the WTO settlement mechanism to challenge renewable energy policies in China, India, Canada, EU member states and the US, on the grounds that subsidies and domestic prioritisation violate free trade principles.

Investment liberalisation agreements, which can be incorporated into trade deals or signed as standalone agreements, have also been invoked to contest climate and environment policies. For example, the governments of Germany, Canada and the US have faced legal action from companies for environment-related regulatory changes and decisions on water pollution, hydraulic fracturing, and an oil pipeline, respectively.

Taken together, these conflicts raise fundamental questions about whether the liberalisation norms in trade agreements will be compatible with the NDCs and the climate policies that NDCs necessitate. At face value, many of the fundamental building blocks of free trade and environmental policy appear to run contrary to each other. For instance, the free trade principle of non-discrimination requires imported products to be treated in the same way as "like" domestic products.[30] This creates

© The Economist Intelligence Unit Limited 2019

challenges for climate policies that distinguish between products according to factors like embodied emissions.[31] A further conflict relates to intellectual property. Developing economies need access to climate innovations, from renewable energy technology to drought-resistant crops, but measures such as compulsory licensing and facilitated access could fall foul of the WTO Agreement on Trade Related Aspects of Intellectual Property Rights.

A further challenge for those who support free trade *and* robust action to tackle climate change is detecting whether the conflicting measures are legitimate climate-conserving interventions or protectionist measures under the pretence of environment policy. Generous subsidies to an unproductive national renewables company could be a genuine attempt to boost renewable energy consumption, or a greener form of the command-and-control industrial policy misadventures adopted in times past, or both.

Are climate-friendly trade deals achievable?

To date, climate agreements have made little reference to trade. Clauses on international shipping and aviation, for instance, were removed from the draft text during the COP21 Paris negotiations. Similarly, countries' NDCs make only limited direct reference to their trade policy. One study found that only 6% of NDCs mention reductions in trade barriers, while just 11% refer to the regulation of trade on climate grounds.[32]

Major trade deals also make limited reference to climate change. Since the scientific processes of climate change cannot be modified, some observers argue that trade agreements must be made more compatible with climate policies rather than vice versa. A Boston University-based group claims the prevailing model of trade and investment treaties "is largely incompatible with the world's broader climate goals", and calls for a redesign to "reward climate-friendly modes of economic activity, curb activity that worsens climate change, and provide the proper policy space so that nation-states can adequately address the climate challenge."[33]

Much of global trade is locked into trade agreements that have already been negotiated, or are currently being negotiated—either at the WTO level or on a bilateral or regional basis. As such, it is imperative to understand the degree to which these trade agreements support the kinds of climate-friendly policies that are implicitly or explicitly required by the NDCs. In the next chapter, we examine whether the WTO supports or hurts climate goals. In chapter 3, we examine the degree to which four contemporary FTAs support climate goals.

© The Economist Intelligence Unit Limited 2019

2. DOES THE WTO SUPPORT OR HURT CLIMATE CHANGE GOALS?

The WTO has focused on the relationship between trade and the environment for over two decades. In 1995, during the Uruguay Round of talks, the WTO established the Committee on Trade and Environment (CTE) to map trade-environmental policy linkages and make recommendations for how to modify WTO rules to account for environmental considerations. The CTE's remit expanded after the Doha Round's 2001 Ministerial Declaration, which recognised the importance of "enhancing the mutual supportiveness of trade and environment"[34] and the reduction or elimination of tariffs and NTBs on environmental goods and services.

The CTE: Moving slowly

The CTE has produced multiple studies on the trade–environment nexus and has provided a forum to exchange views. However, its progress has been limited, not least by the absence of a clear definition of "environmental goods"—a complex concept that is also a fast-moving target, owing to ongoing technological innovation. Environmental goods were historically conceived of as products that address tangible environmental issues, such as air and water pollution. However, the focus has widened to include a spate of climate and renewable energy technologies and low-carbon solutions for transportation and buildings.[35]

Classifications must also consider stages of a good's life cycle. A product may be considered environmental if its production causes less environmental harm than a comparable product (such as an organic product versus a non-organic one). A product could also be defined as environmental if its use has an environmentally beneficial end-effect, compared with a substitute (such as bicycles versus cars). A product may also be considered environmental if it can help clean up or reduce environmental damage (such as pollution treatment and monitoring equipment).

This product heterogeneity complicates attempts at deal-making as the list of products under debate quickly expands, and may include items that are controversial (e.g. ethanol) as well as banal (e.g. hand-held brooms).[36] Beyond product definition challenges, the heterogeneity of WTO members has also hindered progress. The majority of WTO members are developing countries and many are concerned about rich countries embracing "green protectionism" to block their exports.

At an operational level, there has been some coordination between the CTE and climate bodies. The Doha Ministerial Declaration sought to increase the exchange of information between WTO and Multilateral Environmental Agreement secretariats, and to align on criteria for granting observer status. The WTO secretariat attends UNFCCC COP meetings, while the UNFCCC secretariat is an ad hoc observer of the CTE's special sessions. In a nod to shared goals, the UNFCCC has also cautioned against governments using climate change measures as a "disguised attempt" to restrict international trade.[37] However, in general, climate and trade policy actors operate in silos.

A stalled push: The Environmental Goods Agreement

In 2015, the US exported US$238bn of environmental goods, while global trade reached almost US$1trn.[38] An agreement to reduce tariffs on these goods, and accelerate trade further, is an obvious opportunity for synergy between the WTO and climate actors. The Doha talks initially held out the

© The Economist Intelligence Unit Limited 2019

promise of such an agreement. Products under discussion in the talks included wind and hydropower turbines, PV cells, and biogas production tanks, among others.[39]

Following the demise of the Doha talks, in 2014 a group of 18 WTO members began negotiating an Environmental Goods Agreement (EGA). The initial omens were good. The agreement was set to focus on a list of 54 product types already identified by the Asia-Pacific Economic Cooperation. Supporters argued that the agreement would boost exports, provide cheaper access to clean technologies and help countries meet their NDC targets. In 2016, the European Commission estimated that the agreement could boost trade flows in green goods by €21bn, while also making clean technologies more cost-effective.[40]

However, EGA negotiations proved protracted and politicised. Despite a pledge by G20 trade ministers in July 2016 to complete them by the end of the year, they collapsed soon after. Politics played a role—the US attempted to rapidly close the agreement before the end of the Barack Obama presidency—but the primary issue was again a lack of agreement over what products to cover, given the absence of a common definition for environmental goods.

A related challenge was that the negotiations had to focus on "categories" of goods, as defined by the World Customs Organisation's Harmonised System (HS) codes.[41] By 2016, negotiators had developed a "landing zone" of products across 304 HS6 tariff lines. However, as HS codes focus on categories, rather than individual products, there was "over-coverage". For example, the HS code 8541.40 covers climate-friendly PV cells and modules for use in solar power, but also photosensitive semiconductor devices and LEDs (light-emitting diodes)—products that can raise environmental concerns over how they are disposed of.[42] This categorisation issue made it difficult to agree on what products to include, with China adamant about including tariff cuts on solar panels, as well as bicycles.

Paris and the WTO: Heading for conflict?

If countries' climate policies include measures to restrict trade, it is unclear where or how disputes will be resolved. The Paris Agreement is not currently equipped to solve the disputes, and WTO judges lack clear guidance on how to determine whether a policy is an appropriate response measure to climate needs.

Conflicts could arise in various ways. For example, the WTO may take action if environmental subsidies are viewed as disproportionately benefitting domestic firms over foreign competitors. WTO members are free to set health or environmental standards for all products that are consumed in their national territories. However, it is unclear whether the WTO permits a government to restrict the import of goods or services which are themselves not polluting, but which are produced through Production and Processing Methods (PPMs) that do not meet its national environmental regulations or standards.

Emissions trading schemes have not been ruled inconsistent with WTO rules, but border-adjustment carbon taxes may be. The WTO does permit countries to impose compensating charges on similar imported products in order to equalise the tax burden on domestic production. So, direct environmental taxes levied on imported fuel could align with WTO rules if the charges are not in excess of those facing domestic products. However, border charges on products manufactured through GHG-intensive PPMs might be WTO-inconsistent if they are viewed as discriminatory.[43] As such, the future relationship between NDC policies and WTO rules is unclear, and conflicts are possible.

© The Economist Intelligence Unit Limited 2019

Case studies from the coal face

While the WTO has not ruled on any dispute related to the Paris Agreement, or any major multilateral environmental agreement, it has ruled on a series of trade-environmental-related disputes. None of the claimants in these disputes challenged the environmental objectives of the governments concerned. Rather they claimed that the policies caused restrictions that were discriminatory or unnecessarily trade-restrictive.

These disputes provide valuable insight into how future disputes related to climate policy may play out. They also signal a shift in how the WTO views environmental protection. For example, the 1984 *tuna–dolphin* case suggested that a country's policies could not target environmentally damaging PPMs in a third country. However, this judgement was essentially reversed in the landmark *shrimp–turtle* case in 1997 and then in a second iteration of the *tuna-dolphin* case in 2009. In this case, the WTO argued that countries could use the General Agreement on Tariffs and Trade's (GATT) general exceptions (Art. XX) to justify a trade-restricting measure based on PPMs in third countries, if they are protecting an "exhaustible natural resource". However, the disputes make clear that the WTO will continue to prohibit local content requirements, even in the pursuit of environmental objectives.

The Tuna–Dolphin case (1984)

The 1972 Marine Mammal Protection Act (MMPA) required US tuna fishermen to use fishing methods that prevented the trapping of dolphins. In 1984, the US Congress added a provision allowing import bans on tuna from countries that did not employ these "dolphin-safe" methods to prevent foreign competitors from circumventing the MMPA and gaining an unfair advantage over US fishermen. In 1990, Mexico filed a complaint with the GATT, arguing that the US ban was illegal as it focused on PPMs (in this case, the type of nets used to trap dolphins), rather than the product itself (tuna). Mexico argued that the US was not allowed to use GATT Art. XX to force other countries to abide by its domestic environmental laws. The GATT panel decided in Mexico's favour in 1991, although the ruling never became legally binding.[44]

The Shrimp–Turtle case (1997)

In 1997, India, Malaysia, Pakistan and Thailand filed complaints at the WTO against a US decision to force foreign shrimp trawlers to use so-called "turtle excluder devices" (TEDs) when fishing in areas where sea turtles were present. The plaintiffs argued that the measure, based on the US Endangered Species Act of 1973, was in breach of WTO rules as it threatened foreign producers with a trade ban if they did not comply with US environmental law. The WTO dispute settlement mechanism concluded that the US import ban was a legitimate policy, and could be defended under Art. XX's general exceptions provisions relating to exhaustible natural resources. However, it also found that the way the ban operated, and the fact that the US had previously negotiated treaties on sea turtle protection with some affected countries, constituted "arbitrary and unjustifiable discrimination" between WTO members. The US subsequently changed its rules to target individual shipments rather than countries. Furthermore, the revised US measure ensured that countries were able to apply their own policy solutions in protecting turtles rather than obliging the use of TEDs - a practice that the WTO decided was justified under Art.XX.[45] Critically, the ruling pointed to the possibility that trade restrictions can be based on PPMs in another country if those restrictions do not arbitrarily and unjustifiably discriminate

© The Economist Intelligence Unit Limited 2019

between different countries, are needed to protect human, animal or plant life or health or relate to protecting exhaustible natural resources.

Canada: Feed-in-Tariff dispute (2011)

In 2011, Japan and the EU challenged the legality of domestic content requirements in Ontario's FiT programme, a scheme that promised to pay generators of renewable power a guaranteed price under 20- or 40-year contracts. While FiTs are relatively common, Ontario's scheme required wind and solar generators to source a minimum percentage of equipment in Ontario in order to obtain contracts.[46] The Appellate Body thus concluded that the requirements were in violation of Canada's "national treatment" obligations, which prohibit discrimination between imported and domestically produced goods.

India: Solar Cells dispute (2016)

In 2010, India inaugurated a National Solar Mission to establish the country as a global leader in solar power. However, the US challenged the scheme's domestic content requirements for solar cells and solar modules. In settling the claim, the panel followed the legal reasoning set out in the Canada FiT dispute and this finding was upheld on appeal.[47] Few observers quibbled with the legal consistency of the ruling and some renewable industry companies in India claimed that the local content requirements were inefficient and expensive. However, other climate policy observers decried attempts to "kill" India's nascent solar industry. The dispute has continued to fester, with the US claiming that India has failed to comply with the ruling.

Time for a climate waiver?

These disputes shine a spotlight on the types of issues that may arise if countries implement ambitious climate policies. To avoid carbon leakage,[48] countries undertaking ambitious climate policies will likely want to create a fairer playing field—for example, by restricting imports of goods whose PPMs are not climate-friendly. The current trade and environment policy architecture is not equipped to solve the disputes that may arise.

One potential solution is a WTO "climate waiver". James Bacchus, Professor at the University of Central Florida, has outlined a six-step process for creating such a waiver.[49] According to Bacchus, the waiver would fall under Article IX:3 and Article IX:4 of the WTO Agreement. It would enable countries to impose trade-restrictive measures that are in line with Paris Agreement obligations, based on the amount of carbon used or emitted in making the products concerned. It would enable members of the WTO to lawfully take measures that, without the waiver, might be found to be violating WTO law (or which members may perceive to violate WTO law).

Crucially, a climate waiver should not permit countries to pass measures that "unjustifiably or arbitrarily" discriminate between products or countries, as their UNFCCC obligations make clear. A return to outright protectionism would hurt climate goals, not least because it would hinder the flow of innovative and cost-effective climate solutions and technologies, across borders.

Passing a climate waiver would also be a considerable challenge. A permanent WTO climate waiver would require support from three-quarters of WTO members. An added challenge would be convincing developing countries that they are not being unfairly targeted by the waiver and ensuring

© The Economist Intelligence Unit Limited 2019

that developed countries do not take advantage of the waiver, using it as a disguise for protectionism. To overcome this challenge, the climate waiver would need to be carefully worded and could include links to NDCs that consider developing country challenges. To date, there has been little support at the WTO for such a waiver.

EIU assessment:

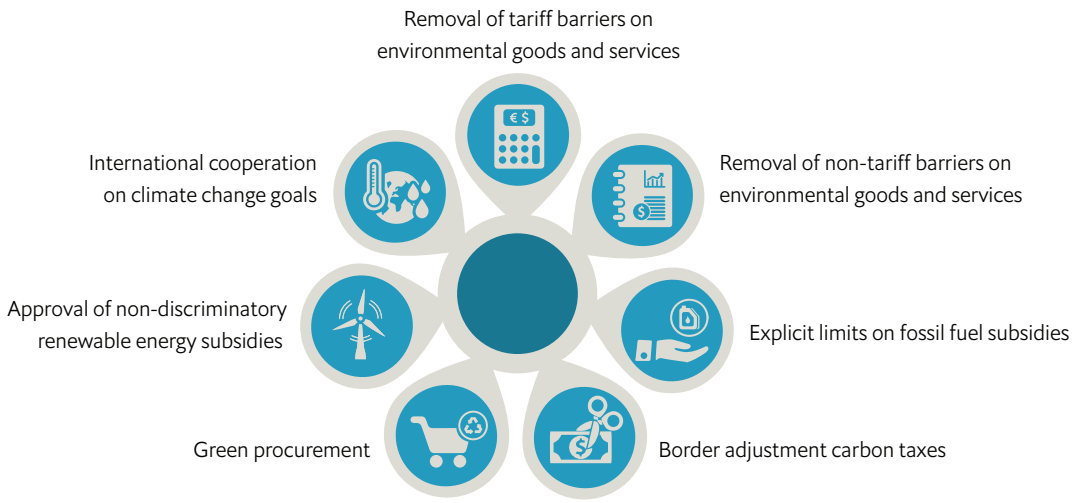
Efforts by the WTO to promote further trade in environmental goods and services have largely stalled owing to the failure to agree on common definitions and the heterogeneity of member states and their goals. Despite some notional cooperation, the WTO's CTE has struggled to coordinate effectively with international climate policy actors. There is also a lack of clarity about how the WTO's dispute settlement mechanism would treat future trade-related disputes arising from climate policies. Past evidence suggests there is flexibility around policies to protect human, animal or plant life, health and to conserve finite natural resources, but that any climate policies that discriminate against third countries or show preference for domestic products will fall foul of WTO rules. To mitigate the risk of disputes, the WTO could consider implementing a climate waiver. However, there has been little support for such a move to date.

© The Economist Intelligence Unit Limited 2019

3. DO CONTEMPORARY TRADE AGREEMENTS *SUPPORT* CLIMATE CHANGE GOALS?

The Paris Agreement states that a regional economic integration organisation—i.e. an FTA— may, with the agreement of its member states, become a party to the UNFCCC and act jointly to implement its objectives.[50] To date, no trade agreement has done so. Indeed, no FTA has explicitly referred to the accord. However, trade agreements could still facilitate the Paris Agreement's goals if they support seven specific opportunities (see graphic, below).

Scope for change
Seven opportunities for boosting climate-friendly trade flows



Source: The Economist Intelligence Unit.

Before examining the degree to which *contemporary* trade agreements support these opportunities, we first summarise how *traditional* trade agreements covered environmental and climate objectives.

Traditional trade agreements (1990–2010)

Trade agreements began to consider environmental issues in the early 1990s with the passing of NAFTA, although some agreements continued to exclude any mention of the environment altogether. When agreements included environmental provisions, they typically did so in a non-binding "preamble" or side agreement, rather than as central provisions with equal legal status to clauses governing goods trade. The language was generally vague and aspirational and focused on member states' obligations to enforce their domestic environmental laws effectively.[51] Agreements sometimes referred to boosting cooperation on environmental issues and committing to multilateral environmental agreements, such as the *Stockholm Declaration on the Human Environment* (1972) and the *Rio Declaration on Environment and Development* (1992).[52] But there was no regional harmonisation of environmental law and no specific targets on reducing emissions.

Different trading powers approached the environment in different ways. The EU's trade agreements typically covered a broader range of issues, such as fishing and timber regulation, than those of the US.

© The Economist Intelligence Unit Limited 2019

However, US agreements were more likely to have dedicated chapters for the environment. Indeed, NAFTA was a rare example of a trade agreement from this period including a whole side agreement dedicated to the environment: the North American Agreement on Environmental Cooperation (NAAEC). The NAAEC also affirmed NAFTA members' rights under leading MEAs, including the right to use certain discriminatory trade measures—that is, NAFTA members could restrict some market access rights based on a multilateral environmental agreement to which they were signatories.

When it came to dealing with environmental issues that could affect trade between the parties,[53] US trade agreements were more likely to create a new institution, such as a dedicated joint committee[54] or environmental affairs council.[55] Other agreements chose a lighter institutional arrangement, such as each party nominating a dedicated point of contact.[56] When disagreements about a member state's obligations arose, the nature of the subsequent proceedings would depend on whether the environment fell under the trade agreement's core dispute-settlement mechanism, or under separate, weaker rules. US trade agreements typically ensured that some judicial, quasi-judicial, or administrative proceedings were available, with some remedies and sanctions. These might include compliance agreements, penalties, fines, imprisonment, injunctions, or the closure of facilities. By contrast, the EU's agreements emphasised cooperation, consultation and diplomatic solutions, rather than punitive sanctions.

Contemporary free trade agreements (2010–present day)

Since 2010, a new generation of FTAs has emerged, of which this report examines four:

- The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP, 2018);[57]
- The EU–Singapore Economic Partnership Agreement (2018);
- The EU–Canada Comprehensive Economic Trade Agreement (CETA, 2016);
- The Korea–Australia Free Trade Agreement (KAFTA, 2014).

There has been a clear expansion of environment-related language in the EU–Singapore, CETA and CPTPP deals, and to a lesser extent in KAFTA. All four agreements have a chapter dedicated to the environment or sustainable development. These chapters address a wider scope of issues compared with traditional agreements, including NTBs for environmental goods, sustainable fishing and the timber trade.

What has not changed, however, is the weak legal status of environment-related provisions. Language remains soft and aspirational, and provisions focus on domestic protection and law enforcement. Objectives beyond this are typically broad, non-binding "best endeavours". Under KAFTA, disputes related to environment provisions are explicitly *excluded* from the main dispute-settlement mechanism, with an emphasis instead on consultation and dialogue. The CPTPP, in contrast, has a stronger dispute-resolution mechanism, which is applicable to environmental provisions.[58] If signatories fail to resolve an environment-related trade dispute within 60 days, the aggrieved party can request consultation under the dispute-settlement chapter, or request the establishment of a panel to seek technical advice. If the panel determines that the measure taken is inconsistent with a party's obligations,[59] it must take steps to resolve the problem. As we examine below, the four FTAs thus largely fail to support the seven opportunities to promote climate change goals.

© The Economist Intelligence Unit Limited 2019

Opportunity 1: The removal of tariff barriers on environmental goods and services

Removing tariffs on environmental goods and services can support the global expansion of renewable energy, recycling, organic agriculture, and other green activities.[60] A 2017 World Bank study estimated that eliminating tariffs and NTBs on certain clean energy technologies and energy efficiency products could increase their trade volume by 14% and 60%, respectively.[61] For consumers, lower tariffs reduce prices, while for exporters they open up new markets and increase access to more innovative and cost-effective suppliers.

Traditional trade agreements do not distinguish between environmental and non-environmental goods and services when addressing tariffs. Contemporary trade agreements do incorporate this opportunity, but in "best endeavour" obligations which emphasise *cooperation* in promoting green trade. For instance, the EU–Singapore agreement advocates *facilitating* the removal of obstacles to trade in climate-friendly goods and services, but does not include binding commitments to reduce or remove tariffs.[62]

EIU assessment:

Contemporary FTAs acknowledge the importance of reducing tariffs on environmental goods and services, but none obliges countries to pursue more than cooperation and discussion in this regard.

Opportunity 1
How contemporary FTAs address the removal of tariff barriers on environmental goods and services

FTA	Does it focus on this opportunity?	What is the level of ambition?	Is it binding?
EU - Singapore	Yes	Low	No
CETA	Yes	Low	No
KAFTA	Yes	Low	No
CPTPP	Yes	Low	No

Source: The Economist Intelligence Unit.

Opportunity 2: The removal of non-tariff barriers on environmental goods and services

In many countries, tariffs on environmental goods and services are already low. A 2017 study found that average tariffs on a selection of environmental goods in Asia-Pacific were just 3.8%, compared with 4.5% for all industrial goods.[63] For these countries, NTBs constitute a bigger challenge. NTBs, such as opaque licensing practices, product standards and testing procedures, increase the cost and complexity of trade. The WTO's Technical Barriers to Trade Agreement prohibits technical requirements that are designed to *restrict trade*, but allows members to impose them for legitimate purposes such as protecting consumers or the environment.

© The Economist Intelligence Unit Limited 2019

Efforts are under way to reduce the NTBs facing environmental goods and services—for example, by harmonising standards. The European Commission has trialled a voluntary Single Market for Green Products to harmonise the voluntary schemes that member states use to measure products' environmental performance.[64] The US Environmental Protection Agency has rolled out its *Energy Star* energy efficiency labelling programmes to Canada, Taiwan, Switzerland and the EU.[65] An FTA could provide an efficient platform to disseminate these common standards across the world or to encourage member states to recognise the equivalence of their respective standards and conformity-assessment procedures. An FTA could enable parties to improve the quality and coherence of standard-making itself.

No traditional FTAs focused on removing NTBs to environmental goods and services but some contemporary FTAs do. However, as with tariffs, the language is vague and aspirational and there are no binding commitments to remove NTBs. The EU–Singapore agreement dedicates a whole chapter to the subject but calls only for countries *to cooperate* on removing or reducing NTBs—for example, through dialogue on the use of eco-labelling and fair trade schemes.[66] Similarly, the deal also only commits parties to, *wherever possible*, using international or regional standards as a basis for domestic technical regulations for renewable energy.[67]

The EU–Canada agreement includes one provision on removing environmental NTBs. However, the parties must only *resolve to make efforts* to facilitate and promote trade and investment in such goods, including by reducing NTBs.[68] Similarly, CPTPP and KAFTA contain a single provision determining that the committee *shall consider* NTBs in environmental goods and services and *endeavour to address* potential barriers to trade.[69]

EIU assessment:

While unprecedented in addressing environmental NTBs, the provisions in contemporary agreements are largely based on "best endeavour", cooperation and consultation, and couched in vague language that is open to interpretation and dependent on good faith of the parties.[70] No agreement contains specific or immediate actions.

Opportunity 2
How contemporary FTAs address the removal of non-tariff barriers on environmental goods and services

FTA	Does it focus on this opportunity?	What is the level of ambition?	Is it binding?
EU - Singapore	Yes	Low	No
CETA	Yes	Low	No
KAFTA	Yes	Low	No
CPTPP	Yes	Low	No

Source: The Economist Intelligence Unit.

© The Economist Intelligence Unit Limited 2019

Opportunity 3: Explicit limits on fossil fuel subsidies

A fossil fuel subsidy is any government action that lowers the cost of fossil fuel energy production by raising the price received by producers or lowering the price paid by consumers. Globally, just over half of fossil fuel subsidies are for oil products, with the rest split almost equally between natural gas and electricity. Estimating the total scale of fossil fuel subsidies is notoriously difficult given their opaque nature and the lack of agreement over what exactly constitutes a subsidy. The OECD and International Energy Agency (IEA) conservatively estimate the total at just over US$370bn.[71] Other organisations include unlevied consumption and carbon taxes as a form of subsidy, and put the figure at closer to US$5.3trn (or 6.5% of global GDP).[72]

While sometimes well-intentioned, fossil fuel subsidies have a raft of negative effects, from encouraging smuggling to hurting poor consumers (who are less likely to own cars, and thus more likely to lose out). They also weaken efforts to address climate change by encouraging wasteful consumption of fossil fuels. A 2014 study by Radoslaw Stefanski at the University of Oxford estimated that fossil fuel subsidies had led to extra consumption that was responsible for 36% of global carbon emissions between 1980 and 2010.[73] Subsidies also make it far more difficult to encourage low-carbon power generation. In 2014, the IEA noted that more than one-third of electricity generated in the Middle East used subsidised oil.[74] The IEA estimated that, were subsidies not in place, all of the main renewable energy technologies, as well as nuclear power, would generally be competitive with oil-fired plants.

FTAs provide a potential avenue to limit or eliminate fossil fuel subsidies. Countries could also use FTAs as a platform to build global consensus on the need to reduce subsidies. However, traditional FTAs ignored this opportunity and there is scarce mention of fossil fuel reduction in contemporary FTAs. Where included, the language is typically soft and "best endeavour" in tone. Firmer language, where it does exist, comes with limits. For example, the EU–Singapore FTA includes a rule to prohibit subsidies, but it does not apply to the coal industry.[75]

Nevertheless, the EU–Singapore FTA provides the best example of an agreement that at least acknowledges the "elephant in the room" of fossil fuel subsidy reduction. It recognises the need for parties to ensure that, when developing public support systems for fossils fuels, *proper account is taken* of the need to reduce GHG emissions *and to limit distortions of trade as much as possible*. It also commits the parties to *share the goal of progressively reducing subsidies for fossil fuels* through measures to alleviate the social consequences associated with the transition to low-carbon fuels. However, the deal also permits the participants to use subsidies where necessary to achieve a public interest objective, provided the amounts are limited to the minimum required, and they have limited effects on trade.[76] None of the other contemporary FTAs—CPTPP, KAFTA or CETA—addresses the removal of fossil fuel subsidies, although they do cover other subsidies, such as those for the fishing industry.[77]

EIU assessment:

Only the EU–Singapore agreement addresses the issue of fossil fuel subsidies, and the language is vague. The agreement also permits countries to continue using subsidies when they are in the public interest.

© The Economist Intelligence Unit Limited 2019

Opportunity 3
How contemporary FTAs address explicit limits on fossil fuel subsidies

FTA	Does it focus on this opportunity?	What is the level of ambition?	Is it binding?
EU - Singapore	Yes	Low	No
CETA	No	-	-
KAFTA	No	-	-
CPTPP	No	-	-

Source: The Economist Intelligence Unit.

Opportunity 4: Border adjustment carbon taxes

By contributing to climate change and air pollution, every tonne of carbon emitted has a negative cost to society. Unlike other costs (such as labour), this is not typically incorporated into the price of carbon-heavy products. When a person drives their car, they pay no cost to compensate society for the carbon they are emitting. Neither do energy-intensive manufacturers or power producers. As a result, the demand for these products is higher than it "should" be.

Carbon pricing aims to address this negative externality. Two "polluter pays" approaches are commonly used: carbon taxes and emission trading schemes (ETSs).[78] As of November 2018, 46 national and 24 subnational jurisdictions are putting a price on carbon, according to the Carbon Pricing Leadership Coalition.[79] If a carbon price applies only in a selection of countries or regions, it creates an incentive to shift activities offshore to countries where there is no price on emissions—a phenomenon known as "carbon leakage". Border adjustment carbon taxes aim to prevent this leakage by imposing levies on imports, based on the carbon emitted during their production, and the price of carbon in the importing country.[80]

No traditional FTAs focused on border adjustment carbon taxes. Among contemporary FTAs, CETA mentions carbon markets as a potential "cooperation activity" in trade-related aspects of parties' current and future climate change regimes and policies (although it does not explicitly mention border adjustment carbon taxes). As with fossil fuel subsidies, most climate policy experts believe that a global carbon price is critical, but few are optimistic about trade agreements successfully introducing them. One challenge is a technical one. Imported products typically contain an array of components, each with varying degrees of embedded carbon. A border adjustment carbon tax would need to disaggregate the product into the carbon emitted from each sector, and preferably each producer within each sector, to avoid unfairly penalising cleaner producers and subsidising dirtier producers.

A second challenge is political. Some countries have weakened or disbanded their carbon pricing schemes owing to political opposition. In Australia, the 2011 Clean Energy Act introduced a carbon tax on major industrial emitters (excluding those in transport and agriculture), who together accounted for 60% of the country's carbon emissions. The tax was levied at A$23 per tonne and was to rise by 2.5% per year until 2015. It was politically controversial, not least because coal accounts for about two-thirds of the country's power generation, meaning that large energy consumers faced considerable costs. Some, such as BHP Billiton, argued that the tax hurt Australia's competitiveness at a time when companies

© The Economist Intelligence Unit Limited 2019

were already facing a highly valued currency. After a change of government in 2013 the scheme was abolished.

Within the Paris Agreement commitments, only Mexico makes reference to border adjustment mechanisms in its NDC. Against this backdrop, convincing governments to agree to border adjustment carbon taxes in bilateral or regional trade agreements is a tall order. Instead, many climate policy activists are focused on encouraging countries, cities and companies to implement their own carbon pricing schemes.[81]

EIU assessment:

The almost complete absence of border adjustment carbon taxes from FTAs indicates how contested such taxes are. The lack of any clear and rigorous methodology for calculating embedded carbon is one constraint, as it would potentially allow countries to use embedded carbon as an excuse for other forms of trade protection.

Opportunity 4
How contemporary FTAs address border adjustment carbon taxes

FTA	Does it focus on this opportunity?	What is the level of ambition?	Is it binding?
EU - Singapore	No	-	-
CETA	Yes	Low	No
KAFTA	No	-	-
CPTPP	No	-	-

Source: The Economist Intelligence Unit.

Opportunity 5: Green procurement

Governments are major buyers of goods and services. In the EU, public procurement reached almost €2trn in 2016, or 13.4% of the bloc's GDP.[82] In developing countries, the figure is typically closer to 30%.[83] Supporters of green procurement argue that, when selecting suppliers, governments should incorporate environmentally friendly criteria into their traditional cost–benefit analysis. By indicating a requirement or preference for high environmental standards, governments can support the expansion of clean technologies and recycled or biodegradable materials. Governments can also act as a "lead buyer" for innovative low-carbon products that are not yet commercially viable, at scale. More controversially, a government could use local content requirements and "offsets" to actively support domestic firms and integrate them into value chains.

The EU has introduced voluntary green public procurement criteria that public agencies can use when purchasing products, from roads to furniture to paint. It also publishes a handbook for public entities with advice on how to go green.[84] Some agencies are more advanced than others. For example, when reviewing proposals for construction projects, the Netherlands Public Infrastructure Authority "corrects" prices by awarding discounts to proposals that display the highest overall environmental

© The Economist Intelligence Unit Limited 2019

performance.[85] Similarly, the Agency of Facility Management in Flanders, Belgium, won the 2018 Sustainable Procurement of the Year award by mandating that at least 50% of office supplies must be made from recycled or renewable materials and by requiring printer cartridge recycling.[86] Despite such initiatives, green procurement remains limited. A 2017 study by the German Institute for Economic Research estimated that only 2.4% of public contracts in Germany include green criteria.[87]

An FTA could support green procurement in various ways. First, it could allow governments to use green criteria in tender evaluations. Second, it could allow governments to calibrate market access provisions so that some forms of local content requirements and offsets for green technologies are permitted.[88] Third, an FTA could provide a forum for broader cooperation on designing coherent green criteria, such as common environmental labelling schemes or performance standards.

When traditional FTAs covered public procurement they did not focus on environmental goals. Rather they typically sought to prevent non-discrimination and offsets in tenders (except for some developing countries). By contrast, all four contemporary FTAs include a chapter on the liberalisation of public procurement markets and reference the environment in their provisions regulating tenders. For example, the CETA and CPTPP agreements permit parties to promote environmental standards and objectives in their tender specifications,[89] provided this is done in a transparent, non-discriminatory and proportional way. The EU–Singapore agreement[90] also encourages the dissemination of common standards, noting that parties can *consider using* eco-labels and green labels from the EU and Singapore when formulating their tender specifications.

EIU assessment:

Although contemporary FTAs reference the ability to use environmental standards in tender specifications, none includes a specific obligation to use low-carbon goods and services in its procurement. This means that any initiative to meet NDCs must come from the individual parties to the FTA rather than from the FTA itself.

Opportunity 5
How contemporary FTAs address green public procurement

FTA	Does it focus on this opportunity?	What is the level of ambition?	Is it binding?
EU - Singapore	Yes	Medium	Yes
CETA	Yes	Medium	Yes
KAFTA	Yes	Medium	Yes
CPTPP	Yes	Medium	Yes

Source: The Economist Intelligence Unit.

© The Economist Intelligence Unit Limited 2019

Opportunity 6: Approval of non-discriminatory renewable energy subsidies

Much like their fossil fuel counterparts (see opportunity 3, above), renewable energy subsidies lower the cost of energy production by raising the price received by producers or lowering the price paid by consumers.[91] Unlike fossil fuel subsidies, renewable energy subsidies help to tackle climate change by reducing emissions and helping to develop local capacity.[92] However, renewable energy subsidies are relatively meagre, at approximately US$120bn, and are dwarfed by those for fossil fuels, which are estimated at between $370bn and $5.3trn.

Globally, evidence suggests that subsidies offer an important avenue for countries to develop their renewable energy industries, particularly while fossil fuel subsidies remain disproportionately subsidised.[93] In the 1990s Germany emerged as a global leader in solar power after it began offering consumers zero interest loans on 12.5% of the cost of solar energy systems, as part of its 100,000 Roofs programme.[94] The Chinese government has actively supported its solar and wind sector with subsidised land and loans. Today, China accounts for one-third of the world's wind power and a quarter of its solar capacity. It is home to six of the top ten solar panel manufacturers and four of the top ten wind turbine makers.[95]

However, subsidy programmes require careful design to avoid distortionary effects and governments must ensure that market participants are able to withstand the inevitable reduction or removal of subsidies (for example, after an election). FTAs could provide an avenue to support, or limit, countries' ability to use renewable energy subsidies. In its agreement on Subsidies and Countervailing Measures (SCM), the WTO prohibits governments from providing subsidies to domestic goods producers if these subsidies are tied to the producer's export performance or their use of domestic over imported goods. The agreement does not prohibit subsidies paid directly to individual consumers (such as Germany's 100,000 Roofs programme), nor does it cover the services sector. Nonetheless, it has clashed with policies to subsidise renewable energy. For example, in one case, the US alleged that China had made a variety of grants, funds and awards to wind turbine manufacturing firms contingent on the use of components from China.

Unlike the GATT's Art. XX, the SCM did not include an exceptions clause under which subsidies related to environmental protection could potentially be defended. Initially, the SCM included a provisional article[96] that made certain "minimally trade distorting" subsidies, for R&D, regional development and environmental adaptation, immune to challenge and the imposition of countervailing duties. However, this clause expired owing to a lack of consensus.

Traditional FTAs, such as the EU–Chile and US–Singapore agreements, incorporated the rights and obligations of the WTO SCM agreement. However, these earlier FTAs also incorporated the GATT Art. XX exceptions and so provided governments with policy space to implement measures they deemed necessary to meet certain domestic policy objectives, such as to reduce the depletion of exhaustible natural resources (although there is little agreement about whether renewable energy subsidies could be defended under Art. XX.)[97] Contemporary FTAs apply a similar approach of incorporating the SCM's obligations and the GATT general exceptions.

However, contemporary FTAs go further in terms of explicitly permitting renewable energy subsidies, albeit under certain conditions. CETA includes a direct link between exceptions to subsidy rules and countries' climate change goals. It affirms countries' commitments under the SCM, but acknowledges their right to use exceptions for environmental measures, including those related to MEAs.[98] These

© The Economist Intelligence Unit Limited 2019

provisions are binding and enforceable. Similarly, the EU–Singapore agreement allows governments to grant subsidies for "environmental purposes" when they are necessary to achieve a public interest objective, when the amounts are limited to the minimum needed, when their effects on trade are limited, and when they do not affect the conditions of trade of either party or competition between the parties.[99]

The CPTPP's list of general exceptions includes environmental measures necessary to protect human, animal or plant life or health, and applies to measures to conserve living and non-living natural resources.[100] This exception could potentially be invoked to justify an NDC-related subsidy, provided the measure is applied in a non-discriminatory manner and is no less trade-restrictive than necessary.

EIU assessment:

Contemporary FTAs have taken some steps to ensure that renewable energy subsidies are permitted, when necessary and proportionate. However, if a government chooses to implement renewable energy subsidies in its NDCs, contemporary FTAs still place the burden of proof on the government to show the necessity and proportionality of such a measure, and the absence of less trade-restricting alternatives.

Opportunity 6
How contemporary FTAs address approval of non-discriminatory renewable energy subsidies

FTA	Does it focus on this opportunity?	What is the level of ambition?	Is it binding?
EU - Singapore	Yes	Medium	No
CETA	Yes	Medium	No
KAFTA	Yes	Medium	No
CPTPP	Yes	Medium	No

Source: The Economist Intelligence Unit.

Opportunity 7: International cooperation

The Paris Agreement represented a triumph for global climate diplomacy and an unprecedented recognition of the shared risks posed by climate change. However, to date, the ambition of NDCs has fallen short. If countries are to increase the ambition and viability of their NDCs, international cooperation will be crucial. This year may see a fresh impetus. At COP25 in November, article 6 of the Paris Agreement - which focuses on the cooperation mechanisms that countries can use to implement their NDCs – will be a major focal point.[101,102]

FTAs could provide a framework for countries to craft, review and renew this climate policy cooperation. Declarations in support of climate policy cooperation, within FTAs, could boost political will among the parties and accelerate the push for stronger regulation to support countries' NDCs.

Some traditional FTAs sought to increase environmental cooperation among parties, with EU-led agreements showing a strong preference for looser cooperation over binding commitments. Contemporary FTAs, particularly those led by the EU, include extensive provisions recognising the

© The Economist Intelligence Unit Limited 2019

importance of parties working together on trade-related aspects of environmental policies. The agreements also cite various multilateral environmental agreements and promote their ratification and implementation. However, these clauses are all non-binding and none of the contemporary agreements explicitly mentions the Paris Agreement, NDCs, specific targets to achieve, or time frames.

The EU–Singapore FTA promotes exchanges of information and cooperation in international forums that address environmental aspects of trade, such as the WTO and the UN Environment Programme (UNEP). Along with CETA, the EU–Singapore agreement dovetails most closely with the Paris Agreement's objectives by referencing the UNFCCC Agenda 21 (1992) and the Johannesburg Plan of Implementation on Sustainable Development (2002). These FTAs seek cooperation and coherence between the two sets of obligations through dialogue and consultations between the parties and with the environmental agreement institutions themselves.

CETA is equally comprehensive, calling on members to cooperate on policies related to domestic mitigation and adaptation, carbon markets, energy efficiency and developing low-carbon technologies. It also encourages members to support impact assessments that gather evidence and information on the implementation of the provisions, and can be distributed to the parties and public stakeholders to facilitate transparency, as well as to make recommendations for improving implementation. It further facilitates cooperation in international forums and the ratification and implementation of MEAs. The CPTPP also outlines an extensive framework for cooperation, as well as a process by which countries should, if relevant, identify and share performance measures to assist in evaluating the efficiency, effectiveness and progress of their cooperation.

KAFTA has the fewest provisions on environmental cooperation,[103] although this does not necessarily mean that the commitment to cooperation is weaker. Among other areas, the agreement recognises the importance of cooperating on trade-related aspects of environmental policies, international climate change regimes and biodiversity, including cooperation in relevant regional and international forums.

EIU assessment:

All of the contemporary FTAs promote environmental cooperation between parties and support multilateral environmental agreements. However, these ambitions are limited. The clauses are non-binding "best endeavour" provisions that do not include target outcomes or formal reporting obligations. The FTAs also do not formalise the need for cooperation in achieving NDCs and the objectives of the Paris Agreement.

Opportunity 7
How contemporary FTAs address softer commitments and cooperation

FTA	Does it focus on this opportunity?	What is the level of ambition?	Is it binding?
EU - Singapore	Yes	Medium	No
CETA	Yes	Medium	No
KAFTA	Yes	Medium	No
CPTPP	Yes	Medium	No

Source: The Economist Intelligence Unit.

© The Economist Intelligence Unit Limited 2019

CONCLUSION: IMPLICATIONS FOR POLICYMAKERS

If the world is to restrict global warming to 1.5°C, trade must be a central part of the solution. As this report makes clear, it will be impossible for countries to meet their ambitious Paris Agreement targets without strong and coherent trade and environmental policies.

As a starting point, bilateral and regional FTAs that are currently under negotiation should be made more "climate friendly", by building upon the best practices seen in recent agreements. Commitments to removing NTBs on environmental goods and services and supporting broader climate policy cooperation, should become standard. Language that is currently vague and non-binding must become clearer and compulsory. Countries must also consider how to seize more challenging opportunities, such as curbs on fossil fuel subsidies and border adjustment carbon taxes.

The WTO must also take decisive action. Its Committee on Trade and Environment should strengthen its day-to-day coordination with the UNFCCC, and its national Trade Policy Reviews should examine whether a country's trade policies are supporting, or hindering, its climate commitments. The WTO should also re-start negotiations over a plurilateral agreement to cut tariffs on environmental goods and services.

To avoid carbon leakage, countries undertaking ambitious climate policies will need to create a fairer playing field. The current trade and environment policy architecture is not equipped to solve the disputes that may arise. To address this challenge, a carefully-designed WTO climate waiver, in line with that recommended by James Bacchus, Professor at the University of Central Florida, will be crucial.

Agreeing on such measures, and implementing them, will not be easy. Incorporating curbs on fossil fuel subsidies and introducing border adjustment taxes into FTAs will be technically and politically challenging. A permanent climate waiver would require support from three-quarters of WTO members (developing countries will need to be convinced that they are not being unfairly targeted). However, the status quo is unsustainable and the world does not have the luxury of time to wait and see how climate–trade policy disputes play out.

Supporting climate-friendly FTAs and introducing a climate waiver would be a pivotal step in aligning the global trade architecture with climatic realities. It would position trade as a solution to climate challenges, rather than a driver.

© The Economist Intelligence Unit Limited 2019

Endnotes

1. The baseline is usually defined as 1850–1900, the earliest period with extensive monitoring data.
2. https://unfccc.int/process/the-paris-agreement/status-of-ratification; and http://cait.wri.org.
3. http://www4.unfccc.int/ndcregistry/Pages/Home.aspx; and http://www4.unfccc.int/ndcregistry/Pages/All.aspx.
4. http://cait.wri.org/indc/#/
5. https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf?isAllowed=y&sequence=1
6. https://ec.europa.eu/eurostat/documents/2995521/8612324/8-25012018-AP-EN.pdf/9d28caef-1961-4dd1-a901-af18f121fb2d
7. CAT is the product of work by three organisations: Climate Analytics, Ecofys and NewClimate Institute.
8. https://climateactiontracker.org/countries/eu/pledges-and-targets/
9. https://climateactiontracker.org/countries/australia/
10. https://www.sciencedirect.com/science/article/pii/S1674927815300058
11. https://climateactiontracker.org/publications/paris-tango-climate-action-so-far-2018-individual-countries-step-forward-others-backward-risking-stranded-coal-assets/
12. https://climateactiontracker.org/publications/paris-tango-climate-action-so-far-2018-individual-countries-step-forward-others-backward-risking-stranded-coal-assets/
13. https://climateactiontracker.org/countries/saudi-arabia/
14. http://www.ipcc.ch/report/sr15/
15. https://www.annualreviews.org/doi/pdf/10.1146/annurev-environ-102017-025817
16. https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf?isAllowed=y&sequence=1
17. https://ndcpartnership.org/members
18. https://talanoadialogue.com/background
19. https://www.bu.edu/pardeeschool/files/2016/11/Pardee_TradeClimate_110316final.pdf
20. https://www.wto.org/english/tratop_e/region_e/region_e.htm
21. https://www.nber.org/papers/w3914.pdf
22. Similarly, a 2016 EU assessment found that the Transatlantic Trade and Investment Partnership could increase emissions by accelerating economic activity, although some of the increase could be mitigated through increased trade in environmental goods and strong environmental protection provisions; https://www.wti.org/media/filer_public/03/b8/03b803d4-e200-4841-9c58-f6612f4a7316/ttip_report_def.pdf; and https://open.bu.edu/bitstream/handle/2144/22909/Pardee_TradeClimate_110316final.pdf?sequence=1&isAllowed=y.
23. For instance, an evaluation of the EU–Korea FTA estimated that emissions in Korea would increase by 0.19% compared with a no-FTA scenario. http://trade.ec.europa.eu/doclib/docs/2017/june/tradoc_155673.pdf
24. https://open.bu.edu/bitstream/handle/2144/22909/Pardee_TradeClimate_110316final.pdf?sequence=1&isAllowed=y
25. It should be noted that the inverse is also possible. which could lead to resource efficiency gains from international trade. See: https://www.wto.org/english/res_e/publications_e/unereport2018_e.pdf

© The Economist Intelligence Unit Limited 2019

26. https://open.bu.edu/bitstream/handle/2144/22909/Pardee_TradeClimate_110316final.pdf?sequence=1&isAllowed=y
27. http://unctad.org/en/PublicationsLibrary/ditcmisc2018d1_en.pdf
28. https://unfccc.int/resource/docs/convkp/conveng.pdf
29. https://www.foeeurope.org/sites/default/files/publications/foee-fqd-trade-ttip-170714_0.pdf
30. Certain WTO agreements allow countries to adopt measures that differentiate between products and processes for legitimates objectives, including the protection of the environment. Such agreements include the Agreement on Technical Barriers to Trade (TBT), the Agreement on Sanitary and Phytosanitary Measures (SPS), and the preamble to the Marrakech Agreement which created the WTO.
31. The lack of agreed methodologies for measuring embedded carbon is a further challenge, and one that can be exploited by exporters of carbon-intensive products who may contest trade barriers as veiled protectionism.
32. https://www.ictsd.org/sites/default/files/research/trade_elements_in_countries_climate_contributions.pdf
33. https://open.bu.edu/bitstream/handle/2144/22909/Pardee_TradeClimate_110316final.pdf?sequence=1&isAllowed=y
34. https://unfccc.int/resource/docs/convkp/conveng.pdf
35. In CTE negotiations, environmental goods mainly fall into two categories. Manufactured goods, such as valves, pumps and compressors, are used in environmental services. Industrial and consumer goods are not primarily used for environmental purposes but their production, use or disposal can have positive environmental effects when compared with substitute goods.
36. https://unctad.org/en/Docs/ditcted20084_en.pdf. Other challenges include the dual-use nature of many goods that end up on environmental goods lists, such as pumps. It is also unclear how to classify some goods that were manufactured using "cleaner" processes, while rapid innovation means that what is considered "cleaner" today may not be in the future.
37. https://unfccc.int/resource/docs/convkp/conveng.pdf
38. https://ustr.gov/trade-agreements/other-initiatives/environmental-goods-agreement
39. https://ustr.gov/trade-agreements/other-initiatives/environmental-goods-agreement
40. http://trade.ec.europa.eu/doclib/docs/2016/june/tradoc_154619.PDF
41. A code with a low number of digits defines broad categories of products, while higher numbers indicate sub-divisions and more detailed definitions. Commitments are usually specified at the six-digit level (though there can be country-specific tariff lines at eight digits, which can be further divided into so-called ex-outs).
42. https://www.epa.gov/cfl/cleaning-broken-cfl. The difference can be significant. The UN Environment Programme calculates that, between 2009 and 2012, 26% of China's exports under this HS code were *not* solar PV products. The figure for exports to developing countries is much higher, at 70%.
43. www.ipcc.ch/ipccreports/tar/wg3/index.php?idp=257
44. A second iteration of this case arose in 2009. Mexico once again filed a complaint against US measures to prevent the trapping of dolphins by fishermen. In December 2018, the WTO Appellate Body stated that the revised US measures were 'not applied in a manner that constitutes a means of arbitrary or unjustifiable discrimination and [are] therefore justified under Article XX of the GATT 1994.
45. https://www.wto.org/english/res_e/publications_e/unereport2018_e.pdf
46. Canada had defended the scheme by pointing to Art. III:8 in GATT, which provides exemptions for government procurement. However, the Appellate Body noted that Ontario was purchasing the electricity "with a view to commercial resale", and that these resales were made in competition with licensed electricity retailers.

© The Economist Intelligence Unit Limited 2019

47. https://www.wto.org/english/tratop_e/dispu_e/456abr_e.pdf
48. Carbon leakage can occur if, owing to costs related to climate policies, businesses transfer production to countries with laxer policies.
49. https://www.cigionline.org/publications/case-wto-climate-waiver
50. They can do so by: (1) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change; (2) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low GHG emissions development, in a manner that does not threaten food production; and (3) Making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development.
51. This list includes: Australia–Singapore (2003), Japan–Mexico Economic Partnership Agreement (EPA) (2005), Malaysia–Japan EPA (2005), Japan–Singapore EPA (2002), Japan–Philippines (2006), NZ–Singapore Closer Economic Partnership (2000), and Singapore–Korea FTAs.
52. NAFTA/NAAEC (1994), Canada-Chile (1997), Canada-Costa Rica (2002).
53. Issues could include lowering or not implementing domestic environmental regulations in order to attract trade or initiating collaborative projects, such as the pilot Syndromic Surveillance System for Extreme Heat Events to help North America Communities Adapt to Climate Change.
54. US–Singapore (2003), US–Oman (2009), US–Jordan (2010), US–Morocco (2004), US–Bahrain (2006), Australia–US (2004).
55. US–CAFTA–Dominican Republic (2005), US–Chile (2004), and US–Korea (2012).
56. If it is, *inter alia*, in a designated language, provides sufficient information to allow the Secretariat to review the submission, "appears to be aimed at promoting enforcement rather than at harassing industry", and filed by a person or organisation residing or established in the territory of a party.
57. CPTPP includes: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.
58. CPTPP Article 20.23.
59. Or that a party has otherwise failed to carry out its obligations, or the measure is causing nullification or impairment.
60. https://ec.europa.eu/eurostat/documents/3859598/5910217/KS-RA-09-012-EN.PDF/01d1733e-46b6-4da8-92e6-766a65d7fd60?version=1.0
61. https://www.ictsd.org/sites/default/files/downloads/2013/10/trade-in-sustainble-energy-services.pdf
62. EU–Singapore Article 12.11; KAFTA Article 18.4 and KAFTA Article 24.9 state that the parties are resolved to make efforts to facilitate and promote trade and investment in environmental goods and services, including through addressing the reduction of NTBs related to these goods and services. "The Parties shall, consistent with their international obligations, pay special attention to facilitating the removal of obstacles to trade or investment in goods and services of particular relevance for climate change mitigation and in particular trade or investment in renewable energy goods and related services"; and Article 20.18: Environmental Goods and Services.
63. https://www.unescap.org/sites/default/files/AWP%20No.%20166.pdf
64. http://ec.europa.eu/environment/eussd/smgp/index.htm
65. https://www.energystar.gov/index.cfm?c=partners.intl_implementation
66. EU–Singapore Article 7.1.
67. EU–Singapore Article 7.5.

© The Economist Intelligence Unit Limited 2019

68. CETA Article 24.9.
69. KAFTA Article 18.4.
70. CETA Article 24.9.
71. https://www.carbonbrief.org/oecd-fossil-fuel-subsidies-373-billion-2015
72. https://www.sciencedirect.com/science/article/abs/pii/S0305750X16304867
73. https://www.oxcarre.ox.ac.uk/files/OxCarreRP2014134(1).pdf
74. https://www.iea.org/publications/freepublications/publication/WEO2014.pdf
75. EU–Singapore Article 12.11 (3).
76. EU–Singapore Annex 11-A Principles Applicable to Other Subsidies.
77. CPTPP Article 20.16 (5).
78. A carbon tax is a fixed price that carbon emitters must pay for each tonne of carbon that they emit. Emitters must decide how much they reduce their emissions by in response to the higher cost. An ETS, by contrast, fixes (or "caps") the total amount of emissions allowed. This quantity is then divided into permits which are allocated, or auctioned, to emitters. If emitters exceed their quota of permits, they must purchase excess permits from other emitters. As a result, the quantity of emissions is fixed, but the price of permits, and hence the cost burden on emitters, is variable and determined by market forces.
79. https://www.carbonpricingleadership.org/who/
80. https://www.ft.com/content/1d5e54ca-4b86-11e7-919a-1e14ce4af89b
81. Companies may also be more supportive of schemes than governments might imagine. According to CDP, a not-for-profit charity, more than 150 major corporations, including Exxon Mobil and Microsoft, already place a "shadow price" on carbon. This means that when assessing different types of equipment to purchase, they will add a hypothetical tax associated with the equipment's carbon emissions before making a decision.
82. http://trade.ec.europa.eu/doclib/docs/2018/september/tradoc_157319.pdf
83. http://www3.weforum.org/docs/Environment_Team/40049_Shaping_Future_Environment_Natural_Resource_Security_report_2018.pdf
84. http://ec.europa.eu/environment/gpp/index_en.htm; and http://ec.europa.eu/environment/gpp/pdf/Buying-Green-Handbook-3rd-Edition.pdf
85. https://www.diw.de/en/diw_01.c.572804.en/topics_news/the_potential_for_green_public_procurement_is_still_largely_unexploited_in_germany.html
86. http://www.procuraplus.org/awards/
87. https://www.diw.de/en/diw_01.c.572804.en/topics_news/the_potential_for_green_public_procurement_is_still_largely_unexploited_in_germany.html
88. In this scenario, an offset (or "set aside") is essentially a quota, or a percentage of designated government procurement contracts or spending, which is reserved or "set aside" for local companies that use renewable energy. This is controversial legally—Canada lost its case for using offsets for its FiT programme at the WTO. As did India.
89. CETA Article 19.9; CPTPP Article 15.12; and KAFTA Article 12.8.
90. EU–Singapore Article 9.9.
91. Governments can subsidise renewable energy in various ways, including FiTs (payments to energy users for the renewable electricity they generate), electricity bills rebates, tax credits, subsidised land for projects and funding for research.#

© The Economist Intelligence Unit Limited 2019

92. http://ftp.zew.de/pub/zew-docs/dp/dp08052.pdf
93. https://insights.som.yale.edu/insights/should-the-government-subsidize-alternative-energy; and https://www.sciencedirect.com/science/article/pii/S1364032116310905
94. http://www.solarselections.co.uk/blog/the-german-solar-feed-in-tariff-setting-the-example
95. https://www.economist.com/special-report/2018/03/15/china-is-rapidly-developing-its-clean-energy-technology
96. SCM Article 8.
97. https://academic.oup.com/jiel/article-pdf/12/4/895/6469906/jgp033.pdf
98. CETA Article 7.8.
99. EU–Singapore Annex 11-A.
100. CPTPP Article 29.1.
101. https://news.un.org/en/story/2018/12/1028681
102. https://unfccc.int/sites/default/files/english_paris_agreement.pdf
103. KAFTA Article 18.8.

© The Economist Intelligence Unit Limited 2019

Copyright

© 2019 The Economist Intelligence Unit Limited. All rights reserved. Neither this publication nor any part of it may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of The Economist Intelligence Unit Limited.

While every effort has been taken to verify the accuracy of this information, The Economist Intelligence Unit Ltd. cannot accept any responsibility or liability for reliance by any person on this report or any of the information, opinions or conclusions set out in this report.

LONDON
20 Cabot Square
London
E14 4QW
United Kingdom
Tel: +44 (0) 20 7576 8181
Email: london@eiu.com

NEW YORK
750 Third Avenue
5th Floor
New York, NY 10017
United States
Tel: + 1 212 698 9717
Email: americas@eiu.com

HONG KONG
1301 Cityplaza Four
12 Taikoo Wan Road
Taikoo Shing
Hong Kong
Tel: + 852 2802 7288
Email: asia@eiu.com