

**PECC SIGNATURE PROJECT: FTAAP PATHWAYS TO PROSPERITY**

**POLICY BRIEF**

**Trade and Climate Change**

Rory McLeod, NZPECC  
June 2024

## **FTAAP POLICY BRIEF: TRADE AND CLIMATE CHANGE**

**Rory McLeod, NZPECC, June 2024**

After a slow start, APEC Leaders have in recent years given the highest priority to future APEC work on combatting climate change. In particular, Leaders have called for analysis on how APEC work programmes on trade and investment and on combatting climate change can be made more mutually supportive. While a good start has been made in such areas as environmental goods and services, this paper finds that in four key areas, trade and investment policies are in fact contributing significantly to climate change rather than helping to alleviate it. These areas are carbon leakage, tariff and NTB escalation, subsidies and the incompatibility of specific trade rules with climate policies (analytical annexes are attached on each of these areas). The paper goes on to argue that the development of FTAAP can be used to reduce and eliminate these tensions and recommends that APEC move with some urgency to develop a work programme to achieve this objective.

### **APEC Work on Tackling Climate Change**

The November 2021 APEC Regional Trends Analysis, in a special chapter on climate change, stated that:

“Climate change is an existential threat not only for the APEC region, but for humanity as a whole. The discussion is no longer about how to prevent climate change; the world has done too little too late for that. The question now is how to keep anthropogenic climate change – that is, climate change due to human activity – within levels that will allow our species to survive on this planet in the long term.”<sup>1</sup>

Most APEC members are also Parties to the Paris Agreement which committed, in 2015, to combat climate change and to accelerate and intensify the actions needed for a sustainable low carbon future. One such commitment was the reduction of greenhouse gases (GHGs) causing global warming. The challenge was not minor. GHG emissions had persistently followed an upward trend for decades, which was only briefly interrupted in 2020 due to pandemic-related economic shutdowns. Carbon emissions saw another record high in 2021. Under the Paris Agreement, participating members have reaffirmed the goal of limiting the global temperature increase to well below 2 degrees celsius, while pursuing efforts to limit the increase to 1.5 degrees. In support of this goal, most individual participants have committed to achieving net zero emissions, usually by 2050 or 2060. As of November 2022, 140 participants, covering 91 percent of global emissions, had adopted or were considering net-zero targets.<sup>2</sup>

When the institutions that underpin our multilateral trading system were created, the climate and environmental challenges were not the emergencies they are today. UNCTAD points out that carbon dioxide emissions have more than quadrupled since the

---

<sup>1</sup> APEC Policy Support Unit, “Regional Trends Analysis”, November 2021

<sup>2</sup> IMF Blog November 2022

establishment of General Agreement on Tariffs and Trade (GATT) in 1947. Since the creation of the World Trade Organization in 1995, these emissions have increased by 50 per cent.<sup>3</sup>

### *APEC Embraces the Need to Tackle Climate Change*

APEC made a slow start on work to tackle climate change. Prior to 2020, a general view prevailed that APEC was an “economic organisation” and that work on “environmental issues” such as climate change sat outside the organisation’s remit.

At the same time, some useful work was launched, particularly on specific issues and within individual groups. For example, in their 2011 Declaration, APEC Leaders committed to reducing energy intensity by at least 45 per cent by 2035. This was followed by APEC Energy Ministers in 2014 committing, as an aspirational goal, to doubling the share of renewables in the APEC energy mix by 2030.<sup>4</sup>

In recent years, APEC has given much higher priority to tackling climate change. The APEC Putrajaya Vision 2040 commits APEC members to “promote economic policies, cooperation and growth which support global efforts to comprehensively address all environmental challenges, including climate change, extreme weather and natural disasters, for a sustainable planet.” To implement the Vision, the 2021 Aotearoa Plan of Action (APA) instructs APEC members to:

“Cooperate in relevant APEC fora to develop, encourage and exchange best practice policies, and promote capacity building programmes, that address all environmental challenges – including climate change – and support sustainable growth, such as through:

- i. structural reform;
- ii. trade, including APEC’s work on facilitation of trade in environmental goods and services;
- iii. public finance, including tax policy and rationalising and phasing out inefficient fossil fuel subsidies that encourage wasteful consumption, while recognising the importance of providing those in need with essential energy services;
- iv. sustainable infrastructure and transport;
- v. promoting sustainable growth across sectors and the development of cost effective low and zero emissions technologies, sustainable finance and, if appropriate, carbon pricing mechanisms; and
- vi. ensuring energy security, access, reliability and resilience through energy transition.”

APEC Leaders have further strengthened these commitments in the last two years. In 2022 they endorsed the Bangkok Goals for a Bio-Circular Green (BCG) Economy which states:

“APEC is determined to continue advancing its sustainability objectives in a bold, responsive, and comprehensive manner to address the heightened economic and environmental challenges and disruptions facing the region, building on our commitments in the Putrajaya Vision 2040 and the actions set out in the Aotearoa Plan of Action (APA), for the prosperity of all our people and future generations.”

The Bangkok Goals commit APEC members to future work in such fields as regulatory reform, finance, infrastructure and skills. In the field of trade, it includes commitments on sustainable supply chains and advancing APEC work on environmental goods and services as

---

<sup>3</sup> UNCTAD, “European Union Carbon Border Adjustment Mechanism: Implications for Developing Countries”, July 2021

<sup>4</sup> See page “Climate Change” on APEC.org

well as reinforcing existing APEC commitments to rationalise and phase out inefficient fossil fuel subsidies.

In 2023 APEC Leaders put the spotlight on trade and investment policies when they endorsed the San Francisco Principles on Integrating Inclusivity and Sustainability into Trade and Investment Principles. Building on previous commitments, the Principles recognise that “Making choices in the development of trade policy that value sustainability and inclusivity is critical to creating opportunities where all can benefit from international trade, while addressing environmental challenges, including climate change.” The Committee on Trade Investment (CTI) is responsible for implementing the Principles and is required to convene a session each year to discuss a specific aspect of implementation.

### **APEC Work on Climate Change and Trade**

In advancing Leaders’ commitments to develop trade and investment policies that help tackle climate change, the CTI has to date focused on a range of well-defined issues. Most obviously, it has recognised that the reduction of tariff and non-tariff barriers on environmental goods and services can speed up the introduction of relevant technologies and skills throughout the region. APEC has also continued to work on fossil fuel subsidies (a work programme that began in 2009 and is outlined in greater detail in the section on subsidies below).

Efforts to promote trade facilitation also have the potential to reduce the resources needed to distribute inputs and final products by lowering transport, storage and distribution costs and associated carbon emissions. Work on customs cooperation is particularly important to improving the efficiency of such processes, particularly through the deployment of digital technologies such as paperless trading. Similarly, work on standards and conformance has the potential to reduce the use of standards as technical barriers to trade (TBTs) in such areas as trade of environmental goods. The use of standards can also drive innovation and reduction of emissions in APEC economies.

### **Future Challenges for APEC on Climate Change and Trade**

The work outlined in the previous section is of undoubted importance and efforts in each of these areas should be continued. However, it is now clear that this work will need to be broadened and deepened significantly if future challenges are to be addressed. A lead can be taken from the 2022 APEC Economic Policy Report (AEPR) on “Structural Reform and a Green Recovery from Economic Shocks”. This argues that the failure to adequately tackle climate change has led to patterns of economic activity that are characterised by the mismanagement and depletion of natural capital, creating risks of further environmental and atmospheric damage. In this regard, governments have an important role in providing predictable and stable long-term policies that reduce the rate and impact of climate change and lower uncertainties and related investment risks for the private sector in developing new sources of growth from green markets and activities.

The AEPR goes on to say that climate change had resulted in large part from the failure of markets to price natural resources efficiently. Externalities and public good issues are

common forms of market failure in markets involving natural resources. They frequently lead to over-consumption of goods such as fossil fuels or a failure to provide adequate protections for the environment. Frequently, the market price of a product does not reflect its true costs, in the sense that this price does not include the climate and environmental costs imposed on society as a result of (GHG) emissions and pollution. Such costs, or negative externalities, are not reflected in the price the consumer pays but are instead borne by society as a whole.

In this context, it is now becoming clear that the regional and global trading system includes features that may act as a significant hindrance to the efforts of member economies to tackle climate change. Such features result largely from the fact that the types of policies needed to tackle the market failure, externality and public good issues involved with climate change may sit at odds with signals and incentives that are created by trade rules and regulations. Four specific challenges are identified in this brief and each is outlined in an annex. They are:

- i. *Carbon Leakage (Annex 1)* - The concept of 'carbon leakage' is used to describe a situation where the advent of tighter emissions regulations in one economy leads to a geographical redistribution of the production of carbon-intensive goods to other economies with weaker regulations. Some economies have considered the adoption of "carbon border adjustment mechanisms" (or CBAMs) to compensate for this difference with the European Union having decided on a fully developed regime (for a limited number of products) and the United Kingdom having announced its intention to do so. It is almost certain the EU regime will be challenged in the WTO and, it seems, there are several grounds for challenge, making the outcome uncertain. While the EU regime entails some negative impacts for trade, investment and supply chains in the Asia-Pacific region, its overall impact is likely to be modest. That being said, the issue of carbon leakage is likely to be of future relevance for APEC and viable means will need to be found to create "a level playing field" for future trade to take place between members with differing climate regulations.
- ii. *Tariff and NTB Escalation (Annex 2)* - Joseph Shapiro and colleagues have sought to measure the level of "implicit subsidy" for carbon that is provided to downstream industries as a result of the existing structure of protection. This subsidy results from tariff and ntb escalation, where effective rates of protection are much higher for "downstream industries (or finished products) than for "upstream industries" (or inputs). This pattern of protection is most pronounced in developed economies. Shapiro assumes that CO<sub>2</sub> should be priced at \$40 per tonne, the rate generally assumed as the price required to lower emissions to a level that would allow Paris Agreement commitments to be met. However, he finds that because of the way upstream inputs are relatively less heavily protected, most upstream inputs involving carbon emissions are afforded significant implicit subsidies rather than being taxed. Globally, the implicit subsidy is estimated at between \$85 and \$120 per tonne of CO<sub>2</sub>. This comes to a total global subsidy of between \$550 to \$800 billion a year, which is of much the same magnitude as explicit fossil fuel subsidies. This provides a massive incentive to developing economy exporters to specialise in the provision of emissions intensive inputs.

- iii. *Environmentally Harmful Subsidies (Annex 3)* – Subsidies are provided to firms largely to promote competitiveness and are recognised as a major challenge for the global and regional trading system. However, the impacts of environmentally harmful subsidies on climate change are far worse. Massive explicit subsidies for fossil fuels and agriculture directly incentivise emissions intensive economic activities at levels that are far above those that would occur in the absence of such instruments. This is significantly compounded by the failure of governments to address implicit subsidies, which occur when emitters are not taxed or charged for the social costs of their emissions. Overall, the World Bank estimates that the magnitude of subsidies for fossil fuels, agriculture, and fisheries – both explicit and implicit - likely exceeds US\$7 trillion per year or approximately 8 percent of global GDP. This amount is many times in excess of government expenditures aimed at promoting alternative “green” technologies. International trade rules are totally unsuited to disciplining these types of subsidies, with the possible exception of the WTO Fisheries Subsidies Agreement which prohibits certain types of environmentally harmful subsidies outright.
  
- iv. *Compatibility of Current Trade Rules with Climate Change Policies (Annex 4)* - International and regional trade agreements generally seek to provide a more even playing field for the businesses of participating member economies. On climate change, this entails a tension with domestic and international rules seeking to curb harmful emissions. To address market failure, these may seek to tilt the playing field in favour of business developing and providing green products and technologies and against business providing emissions intensive products and technologies. In addition to the rules on subsidies, other areas of tension can be identified. Intellectual property rights will be vital for the development of green products and technologies but close attention will be needed to ensure that such rights do not unduly inhibit their rapid dissemination. If such dissemination is to occur, there is also the need for the urgent development of mutually compatible standards of regulations for green products and technologies and for agreed international carbon accounting standards. Finally, state-to-state and investor-state dispute settlement provisions in such areas as investment and government procurement can have a chilling impact on government and business seeking to promote green products and technologies (Annex 4 provides examples where this has already occurred).

APEC economies are at an early stage in the consideration of such issues and this PECC policy brief aims to encourage debate about the concepts being put forward. But the work is urgent given the rapid advance of climate change. There is a risk that if trade and investment policy settings are not adequately adjusted, they will simply be overwhelmed as efforts to combat climate change take increasing priority.

## FTAAP and Climate Change

### *Climate Change Provisions in Existing FTAs/RTAs*

In an extensive analysis of environmental and climate change provisions in FTAs/RTAs<sup>5</sup>, the WTO shows that the number of agreements with environmental provisions has increased rapidly over time, with 97% of those notified containing at least one environmental provision. Today, almost all FTAs/RTAs contain an environment chapter. Although such chapters differ in terms of language, scope and enforceability, they often address relatively similar broad environmental concerns, including the promotion of a level playing field in terms of environmental policies, the implementation of multilateral environmental agreements, and the lowering of barriers to trade in environmental goods and services. Cooperation provisions are often an important component of such chapters, particularly in FTAs/RTAs involving developing economies.

As noted, environment chapters aim to level the playing field between FTA/RTA partners to ensure that those with “weaker” environmental regulations do not gain an “unfair” trade advantage. On the other hand, these chapters can seek to ensure that domestic environmental provisions are non-discriminatory, and do not constitute unnecessary barriers to trade, particularly in such areas as standards.<sup>6</sup> Both types of provisions have the potential to have a chilling effect on the ability of individual economies to implement policies to lower emissions that suit their own domestic circumstances. The inclusion of dispute settlement provisions in FTAs/RTAs, particularly in such areas as investment, can act as further discouragement to implement such policies. It was in part to avoid these impacts that the USMCA, in a major revision to NAFTA and a break with practice under past U.S. FTAs, eliminated ISDS provisions between the United States and Canada, and limited its use between the United States and Mexico.<sup>7</sup>

The WTO analysis shows that specific provisions on climate change are increasingly a feature of modern FTAs/RTAs. Such provisions are to date generally limited to expressions of support for international initiatives to combat climate change, cooperation on climate change policies and the development of green technologies and measures to improve trade in environmental goods and services. Very few contain provisions to address the market failure issues around carbon leakage, tariff and ntb escalation and subsidies discussed earlier in this paper. However, a few “green shoots” are starting to emerge. These include:

- the EU/UK FTA (in force since 2021) requires each party to put in place an effective system for carbon pricing;
- the EU/Singapore FTA refers to the parties’ shared goal of progressively reducing subsidies for fossil fuels (while stating that reductions may be accompanied by measures to alleviate the social consequences associated with the transition to low-carbon fuels);

---

<sup>5</sup> “Trade and Climate Change” Information Brief No.2. WTO, 2022

<sup>6</sup> “Trade, Environment and Climate Change”, New Zealand Ministry of Foreign Affairs and Trade Discussion Paper, 2021

<sup>7</sup> “Environmental Provisions in Free Trade Agreements”, US Congressional Research Service, 2023

- the EU/New Zealand FTA commits the parties to effectively implementing the UNFCCC and the Paris Agreement on climate change. The commitment to respect the Paris Agreement is subject to dispute settlement in respect of “material breaches” (although it is difficult to see how a dispute settlement process could be effectively launched given the long-term nature of Paris Agreement commitments and the ability of each Party to choose their own pathway to achieving these).<sup>8</sup>

### *Inclusion of Climate Change Issues in Future Work on FTAAP.*

There is a clear mandate for inclusion of climate change issues in future work on FTAAP. The APEC Aotearoa Plan of Action commits APEC to “effectively advance efforts on the Free Trade Area of the Asia-Pacific (FTAAP) agenda, consistent with the Lima Declaration”. Meanwhile the 2016 Lima Declaration states that “the eventual FTAAP should do more than achieve liberalization in its narrow sense; it should be high quality and comprehensive, and incorporate and address ‘next generation’ trade and investment issues”. It is clear to all that the list of next generation issues should include sustainability and climate change. APEC business has picked up this theme with the recent ABAC report on CBAMs which recommended APEC should:

“Develop model climate clauses for FTAs/RTAs which provide a mutually agreed approach to lowering the emissions associated with trade and investment. This work would appear to be particularly timely given that the Chair’s Statement for the 2023 APEC Ministers Responsible for Trade meeting underscored APEC’s commitment to advance economic integration in the region including through the FTAAP agenda. Work on how such climate clauses might eventually fit into FTAAP, therefore, would appear to be appropriate. As well as climate clauses as such, model provisions could also include supportive provisions in such areas as environmental goods and services, fossil fuel subsidies, investment, innovation and technology transfer.”

Given its role as an incubator of ideas, APEC as an organisation is ideally suited to carry out such work. One of its advantages is that it can adopt a flexible approach allowing for any resulting commitments to be realised either in a multilateral context (through the likes of the WTO), in individual FTAs or through work to advance the FTAAP concept for the region as a whole.

### *Setting Priorities for Such Work*

As noted, APEC work to date on trade and climate change has concentrated on lowering barriers to trade in environmental goods and services and, to a lesser extent, on fossil fuel subsidies. This work is important and should be continued in the context of FTAAP, with the work on fossil fuel subsidies being of the highest priority. But in terms of the analysis in this paper, four key issues should be given the highest priority for future work on trade and climate change under FTAAP:

Carbon Leakage – As is outlined in Annex 1, parties to FTAAP that have developed high standards for tackling emissions will want to ensure that their efforts are not undermined by trade arrangements with parties which have lower standards. The question is, how can an FTAAP chapter be structured to provide for this.

---

<sup>8</sup> “The EU-New Zealand Agreement Explained”, European Commission, 2023

Up until the present, most of the theoretical work on this question has centred around the concept of “climate clubs”, suggested by Nobel Laureate William Nordhaus. Under this proposal, a club of members with similar climate policies would undertake harmonized emissions reductions and set an international carbon price. Trade between them would be free of climate-related levies. Non-participants would be penalized with uniform percentage tariffs when their products enter club jurisdictions. This proposal requires setting an international carbon price, carbon pricing mechanisms in each of the members and minimum carbon abatement standards.<sup>9</sup>

The EU has expressed itself open to the creation of a climate club on the basis that other parties would need to develop their own ETSs.<sup>10</sup> The idea has also been picked up by the G7 which adopted of a kind of a climate club in December 2022. This is built on three pillars: climate mitigation by working towards a common understanding of how different measures can be made comparable, industry decarbonisation, and boosting international ambition through partnerships and cooperation.<sup>11</sup> This largely voluntary and exploratory arrangement falls well short of the type of climate club that Nordhaus envisioned. It reflects the reality that some G7 members such as the United States are not ready to establish an economywide carbon price or to agree to such an international scheme.

At the same time, some analysts now argue that there is a better way to obtain the benefits of a climate club. One would be to operate a climate club based on mutual recognition of emissions reduction policies rather than through carbon prices alone. For example, Gary Huffbauer, Jeffrey Schott, Megan Hogan and Jisun Kim of the Peterson Institute have argued for such an approach stating:

“A common carbon price is not needed to advance the outcomes committed in the Paris Agreement. After all, some two-thirds of GHGs result from essentially nontraded activities, such as road transport, electricity generation, and home and office heating. Countries can decisively advance their climate commitments by curbing emissions in these activities, while developing guidelines for carbon abatement policies deemed equivalent for traded sectors that incur compliance costs, whether tax or regulatory. Deemed equivalent policies would be exempted from carbon border measures. Such a pact would require detailed examination of the policies, laws, and regulations that each major emitter is implementing to meet its climate commitments, which would be subject to international monitoring and enforcement. The Organization (OECD) might perform these tasks.”<sup>12</sup>

Such an approach may be appropriate for FTAAP given the different circumstances of APEC member economies and the diversity of approaches they are taking to implementing the Paris Agreement. Under this approach, negotiators would agree that a set of policies for each party, which if faithfully implemented and enforced, would be deemed equivalent to specified actions by other parties. Doing so would remove the need for import restrictions

---

<sup>9</sup> Nordhaus, William. “Climate Clubs: Overcoming Free-Riding in International Climate Policy.” *American Economic Review* 105 (4), 2015

<sup>10</sup> P3 Briefing EU Legislation in Progress, “European Carbon Border Adjustment Mechanism – Implications for Climate and Competitiveness” European Parliament, March 2023.

<sup>11</sup> “Terms of Reference for the Climate Club” attached to G7 Leaders Statement, December 2022

<sup>12</sup> P19, Huffbauer GC, Kim J and Schott JJ, Petersen Institute Policy Brief “Can EU Carbon Border Measures Propel WTO Climate Talks?” November 2021

between parties to the agreement. Such an approach would also allow for differential treatment for developing economies in setting the pace of their carbon abatement reforms. It is acknowledged that getting to this point will require considerable work to develop the methodologies to allow equivalence to be assessed. Interim steps (such as peer review processes in APEC) might also be considered.

Tariff and NTB Escalation – Annex 2 outlines recent work showing that tariff and NTB escalation is likely to have negative impacts on emissions, including for the Asia/Pacific region. Given this work is relatively recent, there is still much to be done in scoping out such impacts and the changes to trade and climate change policies needed to correct them. APEC is well suited to undertake such work in terms of its ability to analyse issues at an early stage of development. It also has the advantage that some of the most serious cases of tariff and NTB escalation are to be found outside the Asia-Pacific region, meaning that it could be relatively easier for APEC members to assess the impacts as they scope out key issues for FTAAP.

However, once the analysis is complete, it is likely to show that, to a greater or lesser extent, tariff and ntb escalation increases the incentives to consume high emissions inputs and pushes the production of these inputs to developing economies, which have fewer resources to regulate emissions effectively. At this stage, it will be incumbent on those considering how to approach effective climate provisions for FTAAP to assess the carbon intensity of individual products and the structure of protection for such products.

FTAAP could aim to correct these perverse incentives, while lowering or eliminating trade barriers on goods, services, and technologies that are needed to support clean energy adoption and innovation. While in theory this could be achieved by more consistent tariffs and ntbs across products, it is likely to be far more effective, in the context of the development of FTAAP, to push for the lowering of protection for downstream products towards the levels imposed on upstream products. Such an approach could place FTAAP at the forefront of efforts to ensure that trade and climate change are mutually supportive and lead to genuine greening of trade policy in the region.

Subsidies – Annex 3 outlines how, at a global level, environmentally harmful subsidies have proven to be the most intractable of issues. With their strong links to competitiveness and (in the case of fossil fuels) to subsidised consumption, economies around the world have been largely unwilling to impose disciplines on these measures, despite their adverse impacts on climate change. While the effects of explicit subsidies are massive, the even greater impacts of implicit subsidies are only starting to be understood. It is now clear, therefore, that regional and international rules in this area are urgently needed. APEC is in a strong position to take these issues forward, building on the considerable work that it has already undertaken on fossil fuel subsidies. There are, however, several difficult issues that will need to be teased out in this process. These include:

- how to define fossil fuel subsidies, especially given that many of the most harmful examples are consumer subsidies which are often linked to poverty alleviation;
- how to integrate work on agricultural subsidies alongside fossil fuel subsidies. Agricultural subsidies have been a sensitive trade issue within APEC and there is now a

pressing need to de-link these subsidies from trade and examine their impact on climate change;

- how to include the issue of implicit subsidies in this work, alongside explicit subsidies which are better understood. Implicit subsidies are probably even more harmful than explicit subsidies but their role is only starting to be explored.

Such work would place APEC members in a pivotal position to push for effective disciplines on subsidies in FTAAP, the WTO and elsewhere. In this respect, the WTO Agreement on Fisheries Subsidies is an important precedent in that it (crucially) breaks the link between the provision of subsidies and injury to the industry of another party. Instead, it prohibits certain types of subsidies outright because of their impact on fisheries and the marine environment. However, agreement on fish subsidies took the WTO over 20 years from the time it was first discussed in that organisation. The region and the globe do not have that kind of time when it comes to other environmentally harmful subsidies. Even if commitments are eventually agreed within the WTO, APEC can provide a useful source of pressure for this to happen.

Consistency of Trade Rules – Annex 4 outlines that in specific areas - such as intellectual property, standards and regulation, investment and government procurement – trade rules might be improved to better promote the development and dissemination of green products and technologies. The process of developing FTAAP might consider how such improvements might be achieved. Once again, some of the results of this work might be used more widely as APEC members seek to effect change in organisations such as the WTO. Activities in each of the four priority areas outlined should include a strong element of capacity building. Many economies have quite limited expertise in each of these areas and capacity building work could proceed to the benefit of developing and developed economies alike.

### **Some Concluding Comments**

This report has argued that if FTAAP is to effectively address the next generation issue of climate change, it must effectively address the relationship between the regional trading system and the externalities and market failures responsible for climate change. At present, the trading system is making these problems worse. For example, tariff and ntb escalation is providing strong incentives to use emissions intensive inputs, particularly from developing economies, in the production of final products. Environmentally harmful subsidies are providing incentives to produce and consume emissions intensive products in many different areas. These are well out of proportion to any incentives that exist to develop, produce and consume green technologies and products.

In seeking to address these issues, FTAAP should not move away from seeking to provide open and competitive markets in the region. Rather it should recognise that improving the functioning of markets to address market failure can largely be achieved through trade and liberalisation. For example, the most effective means to address tariff and ntb escalation would be liberalise access for upstream products, particularly in developed economy markets. Similarly, reductions in environmentally harmful subsidies necessary to address

climate change will also improve trade efficiency, not to mention providing significant improvements to government budgets.

Furthermore, addressing these issues through FTAAP has the potential to provide a major unifying framework for the work of APEC in future. It is likely that this work will need to be coordinated by the Committee and Trade and Investment but the likes of the Finance Ministers Process and the Economic Committee should also input on work on subsidies and carbon leakage. There is also the scope for many other groups to apply a climate change lens to their work. These include the Intellectual Property Experts Group (to ensure that new green technologies can be rapidly developed and transferred), the Standards and Conformance Sub-Committee (to ensure that standards regimes also encourage such transfer), the Investment Experts Group (to ensure that dispute settlement regimes do not inhibit such transfer) and the Economic Committee (to contribute to an effective regime for business carbon reporting).

### **Recommendations**

1. In light of the clear instructions provided by APEC Leaders to progress work on trade and climate change, this work must be accorded the highest priority in the future development of FTAAP;
2. Given the strong potential of trade and investment regimes to contribute to the market failures that are causing climate change, the work should concentrate on four priority areas:
  - Approaches to minimising the impacts carbon leakage including a comparison of different approaches to lowering emissions;
  - Significantly reducing tariff and non-tariff barrier escalation for products with emissions intensive inputs;
  - Urgent work to reduce and eliminate environmentally harmful subsidies;
  - Consideration of the consistency of current trade and investment rules with policies needed to combat climate change.
3. This work should continue and build on existing work in such areas as environmental goods and services;
4. This work should encompass analysis, policy dialogue, peer review and capacity building leading to the eventual development of policy guidance and/or model provisions for possible use in advancing the FTAAP vision and more broadly.

## Annex 1: Carbon Leakage

The concept of carbon leakage is a topic which is receiving increasing scrutiny from those with an interest in trade policy. It was recently the subject of a report to APEC from the APEC Business Advisory Council (ABAC ).<sup>13</sup> This annex draws heavily on that report.

### *What is Carbon Leakage?*

As signatories move to meet their Paris Agreement obligations and address the market failures that lead to climate change, some are concerned that their export-intensive trade-exposed (EITE) industries will be put at a competitive disadvantage in global markets. This is not an idle fear. OECD research estimates that up to 25 percent of global GHG emissions are embodied in goods traded across borders. Emissions-intensive trade is concentrated in a handful of sectors, including chemicals, metals, and electronics.<sup>14</sup> Many of these sectors are poised for growth and expanded trade, particularly involving producers based in developing economies, which could potentially further increase global emissions.

The concept of ‘carbon leakage’ is used to describe a situation where the advent of tighter emissions regulations in one jurisdiction leads to a geographical redistribution of the production of carbon-intensive goods from that jurisdiction to other jurisdictions with weaker regulations. Whether this takes the form of an actual relocation of industries or simply of a redistribution of production, the underlying environmental problem is the same: emissions at the global level are not reduced, they simply take place elsewhere. In extreme cases, emissions may even increase if production moves into jurisdictions that allow more carbon-intensive forms of production (sometimes termed “carbon or pollution havens”). A UK Government discussion paper argues that carbon leakage can take place through three main channels:

- Businesses in jurisdictions with ambitious carbon pricing and climate regulation face higher costs, causing a drop in domestic production and associated emissions, and an expansion elsewhere; and/or
- Differences in the strength of carbon pricing and climate regulation influence investment decisions, causing a shift in future production and associated emissions elsewhere; and/or
- Reduced demand for fossil fuels due to policy measures in some jurisdictions could impact international fossil fuel prices, increasing incentives for carbon-intensive production involving the use of fossil fuels elsewhere.<sup>15</sup>

---

<sup>13</sup> “Assessing the Implications of Carbon Border Adjustment Mechanisms for APEC”, ABAC, August 2023

<sup>14</sup> OECD CO2 Emissions embodied in international trade (TECO2) database, 2019, “Carbon dioxide emissions embodied in international trade”

<sup>15</sup> “Addressing Carbon Leakage to Support Decarbonisation”, UK Government Discussion Document, March 2023 (p22)

## *Carbon Border Adjustment Mechanisms – the EU Takes the Lead*

Some economies (the United States, Canada, the European Union and the United Kingdom) have considered developing carbon border adjustment mechanisms (CBAMs) to tackle the problem of carbon leakage. Essentially CBAMs seek to impose a tariff or levy on imports that is the equivalent of the increased costs faced by domestic industry. CBAMs have three main objectives: to level the playing field for domestic industry; to ensure that domestic efforts to lower emissions are not undermined by carbon leakage; and to incentivise policies to lower emissions in other jurisdictions.

Of those economies that have considered CBAMs, so far only the European Union has decided on the details of a full regime. The EU CBAM will apply to a limited number of imports such as iron & steel, aluminium, electricity, certain fertilisers, cement and hydrogen. It will be applied to the importers of these products who will be responsible for the provision of data for the purposes of calculating a duty. (If importers cannot or fail to provide such data, they will be charged a “default rate” based on the 10% worst emitting producers.) A phase-in period will take place between October 2023 and December 2025 where importers will be obligated to provide limited reporting data but will be charged no levies. The regime will come into full force from 2026 when levies will be charged. Exemptions will be given to imports from Iceland, Liechtenstein, and Norway, which participate in the EU ETS, and Switzerland, whose ETS is linked to the EU ETS.

The UK government announced in late 2023 that the UK would also be establishing a CBAM. While this is largely based on the EU CBAM, there are some differences in coverage. (In contrast to the EU CBAM, ceramics and glass are included while electricity is not included. All other sectors are the same.) The UK CBAM is due to come into effect in January 2027 and the UK government is currently consulting on many of the regime’s specific provisions.<sup>16</sup>

### *EU CBAM Likely to Be Challenged in the WTO*

In a 2021 article, James Bacchus, a former chair of the WTO’s Appellate Body, made a detailed assessment of the WTO compatibility of CBAMs.<sup>17</sup> He found that the EU CBAM was open to WTO challenge as follows:

- Origin-based discrimination could be raised since those parties that are either integrated with or linked to the EU ETS are exempted from the CBAM (with the likely claim that this is in violation of the WTO’s most-favoured nation clause (Article I of GATT));
- As the CBAM represents a new charge on imports, it is likely to be in excess of the ceilings on customs duties and other charges that have been agreed by the EU in its schedule of commitments under GATT Article II. To the likely response that this is just part of an internal regime, litigants can further contend that it is the act of

---

<sup>16</sup> HM Customs and HM Treasury, “Introduction of a UK Carbon Border Adjustment Mechanism from January 2027”, March 2024

<sup>17</sup> Bacchus J “Legal Issues with the European Carbon Border Adjustment Mechanism” Cato Institute, August 2021

importing that triggers these specific provisions. There is significant WTO jurisprudence which suggests that the charge would be covered by Article II;

- Other issues likely to be raised are the application of default values (which are particularly challenging for developing economy exporters), the precise methodology used to take into account the free allocation of allowances to domestic producers vis-a-vis the carbon price imposed in third markets, and the regime's transitional provisions, should these be seen to favour domestic producers at the expense of imports. These provisions could, depending on their design, breach the WTO's national treatment rule (Article III:4 of the GATT).

Further, if the EU wanted to mount an "environmental" defence under Article XX of the GATT (on general exceptions), it would need to be able to demonstrate that its measures do not constitute unjustifiable or arbitrary discrimination or a disguised restriction on trade. While it has made a valiant attempt in developing the regime, it does not necessarily always succeed in doing this to the extent that troublesome features such as the application of default values, the precise methodology used, and the transitional provisions remain. Bacchus also notes that under Article XX, the process used to put in place exceptions is important. He goes on to state:

"As to whether the CBAM will be "arbitrary or unjustifiable discrimination," a long string of WTO jurisprudence dating back decades shows that a measure must be evenhanded in its application to be entitled to one of the general exceptions. Will the CBAM be evenhanded if the EU imposes its own climate standard on its trading partners without giving them a chance to suggest changes in that standard or to appeal the application of that standard to their products? It will not be enough for the EU simply to explain its chosen standard to these affected countries; the EU must engage in the due process of a mutual dialogue with them before setting and applying the standard in a way that takes the views of its trading partners into account." <sup>18</sup>

The designers of the EU CBAM have clearly thought deeply about these challenges and some of the CBAM's specific provisions indicate they have attempted to address them. The EU has also decided not to provide export subsidies under the scheme as such subsidies would almost certainly be open to challenge under the WTO Agreement on Subsidies and Countervailing Measures. (This Agreement does not contain the kinds of exceptions provisions that are available under the GATT.)

The European Commission will also be fully aware that the EU CBAM will be subject to challenge in the WTO, with India already having announced its intention to bring a challenge<sup>19</sup>. However, the process is likely to take many years given the complexity of the issues, the likelihood that any initial rulings would be appealed and the ongoing situation with the WTO disputes settlement mechanism. By the end of this process, the Commission would likely be hoping that it has succeeded in what appears to be its primary objective – to have laid the ground for full ETS coverage of domestic European industry in the sectors concerned.

---

<sup>18</sup> Bacchus J "Legal Issues with the European Carbon Border Adjustment Mechanism" Cato Institute, August 2021

<sup>19</sup> "India Plans to Challenge EU Carbon Tax at WTO", Reuters, 17 May 2023

## *Impacts of the EU CBAM*

Modelling shows the EU CBAM is likely to have some impact on carbon leakage from the EU but a minimal impact on emissions, both in the EU and in exporting economies. Within the EU almost all the reduction in emissions results from the reduction and eventual elimination of free allocations to EU producers rather than the CBAM itself. In its own impact assessment report, the European Commission estimates that its preferred option for a CBAM would lead to a 13.8 % reduction in EU emissions for the CBAM sectors relative to the baseline in 2030. In the rest of the world, emissions in the CBAM sectors would decrease by about 0.3 %. However, most of the EU reduction would result from the phase-out of free allocations to EU producers. Carbon leakage would be mitigated to a degree (estimated at - 29 % in the CBAM sectors in 2030), while the negative effects on gross domestic product and consumption are estimated to be very limited.<sup>20</sup>

Within the APEC region, the ABAC report assesses that the EU CBAM will lead to:

- small reductions of exports of covered products by APEC members to the EU;
- an increase in compliance costs as APEC exporters meet the significant information requirements involved;
- reductions in supply chain efficiencies as APEC exporters adjust their operations to minimise costs (eg by sending “cleaner” product to the EU and “dirtier” product elsewhere);
- some chilling of foreign investment flows to APEC economies as investors wait to assess the regime’s impacts, particularly in terms of its future extension to other products.

But overall, the impacts of the EU CBAM on APEC economies are likely to be quite modest. This is because of the limited product coverage of the EU scheme. Table 1 shows that for the top 10 exporters of CBAM products to the EU, only three – Ukraine, Serbia and the United Arab Emirates – are likely to see CBAMs applied to more than 10 percent of their total EU exports. No APEC members fall into this category with Russia - at 7.4% - having the highest exposure. Instead, the CBAM’s impact is likely to be greatest for smaller economies outside the APEC region such as Mozambique, Bosnia and Herzegovina, Ukraine, Serbia, North Macedonia, Montenegro, Zimbabwe, Moldova, and Albania.<sup>21</sup> Furthermore, Russia, China and Korea - where discernible future impacts can be foreseen - are large, sophisticated economies whose exporting firms have several options for navigating the challenges posed.

---

<sup>20</sup> “EU Carbon Border Adjustment Mechanism: Implications for Climate and Competitiveness”, EU Legislation Briefing, European Union, 2023

<sup>21</sup> Agence France de Development “Impact of CBAMs on the EU’s Trade Partners – Consequences for Developing Countries” 2022

Table 1: Top 10 Sources of CBAM Goods, by Source 2020<sup>22</sup>

Source	Total EU Goods Imports (\$million)	Total EU Imports of CBAM Goods (\$million)	Percentage EU Goods Imports
Russia	116,558	8,576	7.4
China	471,218	5,635	1.2
Turkey	76,619	5,401	7.0
United Kingdom	205,541	5,401	2.6
Ukraine	20,178	3,183	15.8
South Korea	54,115	2,931	5.4
India	40,521	2,780	6.9
Serbia	13,160	1,434	10.9
United States	248,976	1,394	0.6
United Arab Emirates	10,610	1,082	10.2
<b>Total</b>	<b>1,257,496</b>	<b>37,817</b>	<b>3.0</b>

### *Geopolitical Impacts*

The EU CBAM regime has been the subject of significant international criticism. Up to now, there is general agreement that international cooperation is at the heart of climate action through the UNFCCC. Many outside the EU complain that the CBAM has been adopted on a unilateral basis without consultation of affected parties. They point to the fact that firms from those jurisdictions which have adopted strategies on emission control which do not include an ETS are particularly disadvantaged. This is even though the ability of each member to decide their own approach to emissions control is enshrined in the UNFCCC.

For many developing economies the issues run deep. This is because the CBAM may also be seen as unfair from an environmental perspective. The impact is most acutely felt in producer economies that have incurred the negative environmental costs to the benefit of consumers in the EU. Furthermore, many developing economies are not significant contributors to the emissions that have accumulated in the atmosphere over long periods of time. The CBAM is based on current emissions whereas historical responsibility is about long-term contributions. Certain developing economies have made reductions to their emissions, which, considering their situation, has required a proportionally larger effort than the EU. They say the CBAM disregards, at least to some extent, the principle of Common but Differentiated Responsibilities and Respective Capabilities, which is an important principle of the UNFCCC.<sup>23</sup>

The real danger to international trade and investment lies in the fact that some of the world's most powerful economies (many of which are members of APEC) may decide to

<sup>22</sup> Sourced from Huffbauer GC, Kim J and Schott JJ, Petersen Institute Policy Brief "Can EU Carbon Border Measures Propel WTO Climate Talks?" November 2021

<sup>23</sup> Pietras J, "Navigating the Carbon Border Adjustment Mechanism – the Dangers of Non-Compliance and Circumvention", Wilfred Martens Centre for European Studies, 2022

retaliate in response to the imposition of the EU CBAM. Retaliatory measures are likely to be placed on sensitive products (probably in this case unrelated to the CBAM) and could lead to greater costs for trade and supply chains than the EU CBAM itself.

Yet few could argue that the EU's objectives for the CBAM are not worthy in terms of the fact that they seek to address carbon leakage that would otherwise result from the operation of its ETS and key failures existing in markets for carbon. Certainly, the EU has stressed these features in its diplomatic efforts to gain international acceptance of the CBAM. The key question in this respect is whether better options exist to achieve these objectives.

## Annex 2: Tariff and NTB Escalation

This annex draws heavily on the work of Joseph Shapiro and colleagues. They have attempted to develop a framework that will allow improved analysis of the links between trade and climate change. This framework is highly useful in shedding light on many of the market failure, externality and public good issues that are so important for this analysis.

### *Trade and Climate Change – Some Key Facts*

In their chapter “Globalisation and the Environment”, Copeland, Shapiro and Taylor<sup>24</sup> set out a list of “stylised facts” which are presented drawing on existing empirical research and analysis. For the purposes of this paper, the following are of most relevance:

- i. *Dirty Industries are More Exposed to Trade* – The authors seek to classify “clean” and “dirty” industries on a sliding scale. They find that on average, only about 5% of the output of clean industries is traded with the corresponding figure for dirty industries standing at 22%. In part this is because manufactured products (which tend to be “dirtier”) are more traded than services (which tend to be “cleaner”). In addition, dirty industries tend to have lower tariffs and ntbs which encourages trade.
- ii. *Dirty Industries are More Upstream* – The authors measure how “upstream” each industry is in the composition of final consumption. Downstream industries primarily serve final demand. Upstream industries tend to sell to other industries which in turn often sell to still other industries. Their analysis shows that for downstream industries, most emissions occur from each industry’s value chain rather than from the industry itself. They stress that for each final product, it is important to measure the emissions embodied in the value chain of that product rather than the final assembly of the product concerned.
- iii. *Pollution Emission Rates Vary Substantially Across Economies* – The authors present statistics that show that for most pollutants, the lowest emission intensities are in Europe. The US and Canada have moderate emission intensities while economies in Asia and Oceania have the highest emission intensities. The higher rates in Asia and Oceania encompass economies with a wide range of income per capita levels, from India to Australia. Emissions intensities are skewed and the dirtiest have 20 or more times the emission intensity than the cleanest economies.
- iv. *Most Global Emissions Growth Comes from Developing Economies* – with data available from 1995 to 2009, the authors show that emissions from larger developed economies were flat or declining. In middle income developing economies, emissions grew steadily. China’s emissions were flat until it joined the WTO in 2001 but then its emissions doubled between 2001 and 2009. In other middle income developing economies, they were around 50% higher in 2009 than in 1995. The analysis suggests that the most rapid environmental change has occurred in low and middle-income economies. Because developing economies are where large unilateral tariff reductions have occurred, or where jurisdictions have joined the WTO, they may also represent areas where trade exposure has changed the most.

---

<sup>24</sup> Copeland BR, Shapiro JS and Taylor MS “Globalisation and the Environment”, Chapter in *The Handbook of International Economics, Volume 5*, Gita Gopinath, Elhanan Helpman and Kenneth Rogoff (eds)

- v. *Developed Economies are Increasingly Outsourcing Pollution* – The authors measure the emissions composition of developed economy imports over time. For example, for CO<sub>2</sub>, developed economy imports in 1995 accounted for about half a billion tonnes of emissions or 2.5% of all global CO<sub>2</sub> emissions. By 2008, this figure had risen to 1.5 billion tonnes or 5.5% of all global CO<sub>2</sub> emissions. Similar patterns occur for other pollutants. The change in emissions embodied in net trade may reflect changes in the scale of net trade flows, the composition of net trade flows across industries, and in the techniques used to produce goods in different economies.

### *The Environmental Bias of Trade Policy*

Sitting at the heart of these stylised facts and largely acting as an explanation for them is analysis conducted by Joseph Shapiro in his paper “The Environmental Bias of Trade Policy”<sup>25</sup>. Shapiro seeks to analyse the relationship between different industries in terms of their emissions and their level of trade protection.

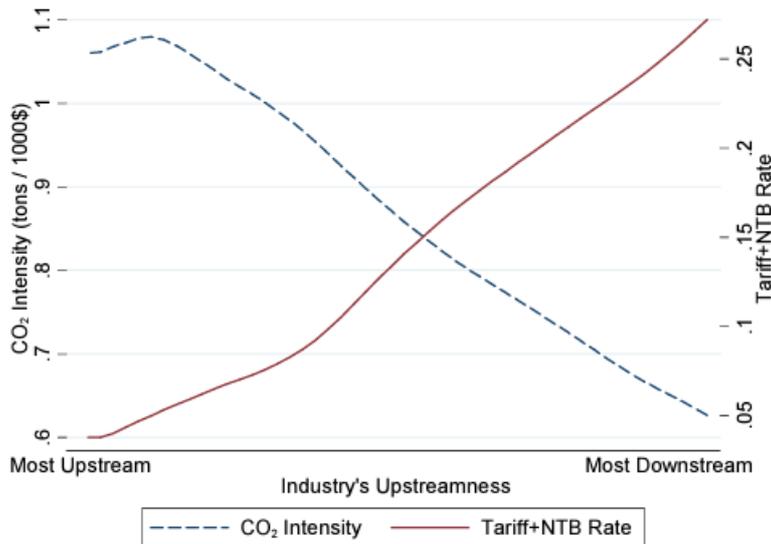
Taking data from 50 different economies, he first defines “dirty” and “clean” industries based on their CO<sub>2</sub> emissions per dollar of output. He then plots these industries along the value chains for various products. His finding in this area is that the more upstream a product is in the value chain, the higher the level of CO<sub>2</sub> emissions involved in its production. Furthermore, upstream products are more likely to be traded. This makes intuitive sense. For example, the imported coal (for power generation) and aluminium and steel involved in making an automobile is likely to involve much higher emissions than the automobile’s final manufacture in the domestic market of sale.

He then examines the structure of production for each of the industries concerned. This shows a clear pattern of tariff and ntb escalation for almost all industries. Comparing “cleanest” and “dirtiest” industries, he finds that tariffs are almost four times as high for clean industries (at 9% versus 2%). The pattern is even more marked for ntbs (at 25% versus 5%). This pattern is familiar to trade policy specialists. It results from governments (particularly in developed economies) seeking to encourage their private sectors to specialise in the production of downstream products which are both environmentally cleaner and technologically more sophisticated. This puts these industries in a strong position to lobby for higher protection for their downstream products while keeping (often imported) inputs cheap.

These findings result in an inverse relationship between the “dirtiness” and level of protection provided to upstream and downstream industries respectively as is illustrated in figure 1.

---

<sup>25</sup> Shapiro, Joseph “The Environmental Bias of Trade Policy”, Quarterly Journal of Economics, May 2020



Source: Shapiro, Joseph "The Environmental Bias of Trade Policy", p36

Finally, Shapiro seeks to measure the level of "implicit subsidy" for carbon that is provided to downstream industries as a result of this structure of protection. He assumes that CO<sub>2</sub> should be priced at \$40 per tonne, the rate generally assumed as the price that is required to lower emissions to a level that would allow Paris Agreement commitments to be met. However, he finds that because of the much greater protection provided to downstream products, most upstream inputs involving carbon emissions are afforded significant implicit subsidies rather than being taxed. Globally, the implicit subsidy is estimated at between \$85 and \$120 per tonne of CO<sub>2</sub>.<sup>26</sup> This comes to a total global subsidy of between \$550 to \$800 billion a year, which is of much the same magnitude as explicit fossil fuel subsidies.

The rate of subsidy, however, varies significantly between different economies as is shown in figure 2 (attached as separate document). The highest rate of subsidy occurrence is in Norway with high rates also evident in EU members such as France and Germany as well as the United Kingdom. In general, rates of subsidy tend to be significantly lower in developing rather than developed economies. As far as APEC members are concerned, only Australia and Russia are in the group with highest subsidies, the United States, Japan, Canada, Peru

<sup>26</sup> Shapiro (2021) analyses the structure of trade protection and finds that tariff and non-tariff barriers are lower in carbon-intensive industries than in clean industries. The pattern holds globally and within almost all economies. To arrive at this fact, he calculates the embodied carbon content of trade - this includes both direct emissions and emissions generated during the production of intermediate goods used to produce traded goods. To infer the environmental bias of trade policy, he estimates:

$$t_{js} = \alpha E_{js} + \mu_j + \epsilon_{js}$$

where  $t_{js}$  is the tariff (or tariff-equivalent of the non-tariff barrier) imposed by economy  $j$  on goods from industry  $s$ .  $E_{js}$  is the average embodied emissions for imports in industry  $s$  (measured as tons of emissions per dollar of imports). The estimated parameter  $\mu_j$  captures economy  $j$ 's average rate of trade protection, and  $\alpha$  can be interpreted as the implicit carbon tariff; that is, it is the tax (per ton of CO<sub>2</sub>) on imports of embodied carbon. If  $\alpha > 0$ , carbon intensive goods face higher tariffs on average. If  $\alpha < 0$ , carbon intensive goods face lower than average tariffs. He finds that  $\alpha$  is in the range of -85 to -120. This is equivalent to a subsidy to trade in embodied carbon emissions of between \$85 and \$120 per ton.

and Chile are in the middle group, whereas China and all other APEC economies measured provide the lowest subsidies.

Figure 2: Implicit Carbon Tax on Traded Goods by Economy



Source: Shapiro, Joseph "The Environmental Bias of Trade Policy", p40

### *Implications of Tariff and NTB Escalation*

If tariff and ntb escalation were to be eliminated and a single rate of protection applied to all industries globally, it is clear that a significant reallocation of resources would result. Firms in developing economies would become relatively more competitive in the manufacture of downstream products whereas firms in developed economies would become relatively more competitive in the provision of upstream inputs. In terms of the effect on global emissions, this would have a significantly positive result. Not only would the incentives to employ carbon intensive upstream inputs be reduced or removed, but more of these inputs would be produced in developed economies with more capacity to effectively regulate emissions.

At present, however, the structure of protection is incentivising firms in developing economies to provide emissions intensive inputs rather than final products. This is despite the fact that the implicit subsidies provided to emissions intensive inputs is much lower in developing economies. Once this is properly understood, it will significantly impact the narrative that casts China and other developing economies as "dirty" producers which are responsible for the growth in global emissions. It also helps explain developing economy antagonism towards the EU CBAM. Another narrative that could be considered is that after being consigned to the provision of emissions intensive inputs, the EU CBAM has the impact of penalising developing economy exporters even in this area. If the EU was serious about reducing emissions, it would be far more effective to reduce the levels of tariff and NTB escalation that it employs domestically.

Finally, Shapiro and others note that trade agreements would make good agreements to address these issues as economies seek to move in concert so that industries in one or the

other are not unduly penalised. Drawing on Shapiro's work, Clausing and Wolfgram of the Petersen Institute note:

"Trade negotiations can potentially serve as invaluable tools to further climate aims. The current trade policy structure works against climate change mitigation, since trade barriers (both tariff and non-tariff) are far higher for low-carbon industries than for high-carbon industries. This provides large implicit subsidies to emissions-intensive production, relative to cleaner production (Shapiro 2021). New rounds of trade negotiation can aim to correct these perverse incentives, while lowering or eliminating trade barriers on goods, services, and technology that are needed to support clean energy adoption and innovation. Even if carbon border adjustment mechanisms or climate clubs result in some tariff increases, this can be done alongside broader efforts at green trade liberalization and a rebalancing of current tariffs structures."<sup>27</sup>

Such a development would have the potential to create some unusual bedfellows. For example, reducing the tariff and NTB escalation in this area would likely be supported by fossil fuel producers in developed economies as their output would become relatively more competitive. It would also likely be supported by climate change activists seeking effective means to lower global emissions.

---

<sup>27</sup> Clausing, Kimberly A and Wolfgram Catherine, "Carbon Border Adjustments, Climate Clubs and Subsidy Races when Climate Policies Vary", Peterson Institute Working Paper, May 2023

## Annex 3: Environmentally Harmful Subsidies

### *Subsidies and Trade*

There is a well-established relationship between subsidies and trade. Subsidies are often provided with the aim of increasing an industry's international competitiveness. However, their rationale is often not well communicated, and their provision can simply be the result of political lobbying. On the other hand, subsidies may be justified in some case to correct for market failure which is particularly relevant in the case of climate change.

When it comes to trade, subsidies can:

- distort trade and investment decisions in other economies. This is particularly true when they include discriminatory provisions such as a requirement that manufactured goods use components made exclusively or primarily within the economy providing the subsidy;
- undermine the benefits of past tariff and market- access negotiations that were undertaken in regional and multilateral agreements. This happens most often when subsidies undercut improved market access that flows from tariff reductions. Over time, this can increase perceptions that trade is unfair and can reduce public support for trade;
- lead a trading partner to believe that another government has promoted unfair competition and compel it to react in kind. These reactions can lead to an escalating and wasteful subsidy war without either trading partner achieving an effective competitive advantage.<sup>28</sup>

It is for these reasons that WTO members have sought to discipline subsidies through such vehicles as the WTO Agreement on Subsidies and Countervailing Measures, the WTO Agreement on Agriculture and the WTO Agreement on Fisheries Subsidies. However, all these agreements contain significant gaps and weaknesses (which will be discussed later in this section). In addition, new subsidies, countervailing duties and rules such as the US Inflation Reduction Act, the EU Green Deal Industrial Plan, and the Made in China 2025 strategy have raised concerns about the increased potential for subsidy wars.

### *Implicit and Explicit Environmentally Harmful Subsidies*

International subsidy disciplines have to date manifestly also failed to reign in the provision of subsidies for products that produce harmful emissions. This is underlined by recent studies by the World Bank (on fossil fuels, agriculture and fisheries)<sup>29</sup> and the IMF (on fossil fuels)<sup>30</sup>. Both make a distinction between “explicit” and “implicit” subsidies where:

- explicit subsidies are direct fiscal expenditures from governments or taxpayers to producers or consumers; and

---

<sup>28</sup> Van Heuvelen, “Subsidy Wars”, IMF Finance and Development, June 2023

<sup>29</sup> Damania R et al, “Detoxing Development: Repurposing Environmentally Harmful Subsidies”, World Bank Group, 2023

<sup>30</sup> Black S et al, “IMF Fossil Fuels Subsidies Data: 2023 Update”, IMF Working Papers, 2023

- implicit subsidies are the price difference between the “undistorted” (socially optimal) price and the actual price that emerges after the subsidy is paid. Such gaps may arise when the subsidy encourages environmentally damaging behaviour and often reflects inadequate regulation and policies that promote external damage. The burning of fossil fuels or the emission of methane from agriculture may have significant impacts on greenhouse gases which contribute to global climate change. These externalities impose costs on others, which can be treated as implicit subsidies accruing to the polluter.

Overall, the World Bank estimates that the magnitude of subsidies for fossil fuels, agriculture, and fisheries – both explicit and implicit - likely exceeds US\$7 trillion per year or approximately 8 percent of global GDP.

### *Agricultural Subsidies*

Agricultural subsidies are provided for several reasons including to attain food price stability and security, supplement farmers’ incomes or (even) to provide for improved environmental outcomes. OECD analysis on the agriculture sector shows explicit subsidies in economies with available data totalling US\$635 billion per year, or 18 percent of agricultural value added. The World Bank estimates the true global number likely exceeds US\$1 trillion. More than 60 percent of these subsidies are coupled with production, implying that farmers receive support for buying specific inputs or growing specific crops.

APEC member economies are amongst the largest providers of explicit agricultural subsidies. By a wide margin, China (at around \$230 billion) is the largest followed by the United States (at around \$100 billion) and Japan (at around \$50 billion). However, when explicit subsidies are expressed as a share of total agricultural production, the picture changes quite a bit. The most significant providers of subsidies to their agricultural sectors are Japan and Korea followed by the United States, China and Russia. Economies such as Australia, New Zealand and Chile provide low levels of explicit subsidies relative to total production.<sup>31</sup>

In more specific terms, the World Bank report finds that explicit subsidies:

- are employed relatively more in developed economies, even when compared to total production;
- benefit wealthier farmers because these farmers use more inputs and produce more outputs;
- incentivise excessive fertiliser use which suppresses agricultural productivity;
- drive significant tropical deforestation in order to provide inputs elsewhere (eg soybeans to cattle farms).

Calculating the magnitude of implicit agricultural subsidies is much more difficult. The World Bank report estimates total greenhouse gases from agriculture to be approximately 13.7 gigatons of CO<sub>2</sub> equivalent or approximately 26 percent of total annual greenhouse gas emissions. Given that nearly all these emissions are untaxed and unregulated, these

---

<sup>31</sup> OECD figures are quoted from World Bank report pp 112-114

emissions can be considered an implicit agricultural subsidy. At a shadow price of between US\$40 and US\$80 per ton of CO<sub>2</sub> equivalent, this subsidy is the equivalent of US\$548 billion to US\$1.1 trillion worth of external damages that are not internalized by producers or consumers of agricultural products.<sup>32</sup>

While little individual APEC economy data is generally not available at this stage, it is likely that more study of implicit subsidies will change the way that subsidy issues are seen in different APEC economies. For example, it is quite possible that economies such as Australia, New Zealand and Chile, which provide low levels of explicit subsidies will be found to provide quite high levels of implicit subsidies. This is because these economies produce large quantities of pastoral products (such as meat and dairy) which involve high levels of methane emissions. A pioneering study<sup>33</sup> for New Zealand found that in 2021, implicit subsidies for meat and dairy production amounted to a little under NZ\$1 billion for emissions.<sup>34</sup>

### *Fossil Fuel Subsidies*

Fossil fuel subsidies can take many forms. For example, production subsidies include cash transfers, tax credits and rebates, and trade restrictions such as quotas. Consumption subsidies often aim to lower the price of fossil fuels to ensure affordable access to energy. For example, many economies heavily subsidise petrol to keep the cost at the pump low for consumers.

The World Bank notes that in seeking to promote industrialization and energy affordability - and also to cater to influential political interest groups - governments around the world have actively lowered the cost of polluting forms of energy through the provision of explicit subsidies. These have grown into expensive support programs for the consumers and producers of oil, gas, and coal products. Globally, explicit fossil fuel subsidies are estimated to have stood at around US\$577 billion in 2021. This is almost three times more than global subsidies paid to the renewable energy sector as well as almost six times more than the US\$100 billion that members have committed to raise in annual climate financing under the Paris Agreement on Climate Change.

However, the use of fossil fuels causes massive levels of emissions whether or not such use is provided with explicit subsidies. The presence of implicit subsidies for fossil fuels represents the main externality or market failure responsible for climate change. The IMF has taken the step of estimating and predicting both explicit and implicit subsidies for fossil fuels. These are set out in figure 3. Globally, estimated fossil fuel subsidies were \$7 trillion in 2022 or 7.1% of GDP. Explicit and implicit subsidies respectively accounted for 18% and 82% of the total.

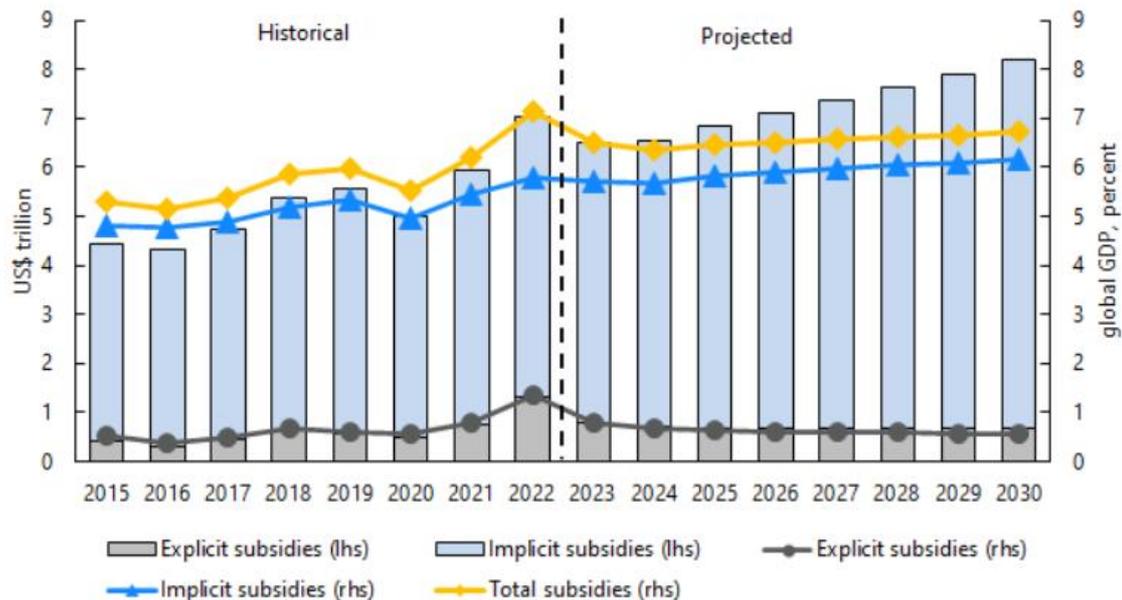
---

<sup>32</sup> World Bank report p7

<sup>33</sup> Joy, Mike, Marriot Lisa and Chapple, Simon, "Levelling the Grazing Paddock", New Zealand Policy Quarterly, Vol. 18 No. 4, 2022

<sup>34</sup> For the related but separate issue of nitrates, the report found that the situation in New Zealand was far worse in that 2021 implicit subsidies for nitrates in the meat and dairy sectors amounted to around NZ\$79 billion (which equates to around 22% of New Zealand 2021 GDP).

Figure 3: Global Explicit and Implicit Subsidies



Based on IMF calculations, fossil fuel subsidy provision is set out in Appendix 1. In examining these numbers, it is important to be as objective and impartial as possible. In terms of APEC members, China is by far the largest provider of subsidies (at \$2,235 billion) followed by the United States (\$757 billion), Japan (\$310 billion) and Russia (\$253 billion). In terms of emissions per capita, however, the picture changes somewhat with Korea (at \$3,120) followed by Russia (\$2,912), Japan (\$2,498) and the United States (\$2,243). When looking at the mix between explicit and implicit subsidies, some economies (such as Indonesia at \$78 and \$116 billion respectively) have relatively high explicit and low implicit subsidies whereas others (such as the United States at \$3 and \$754 billion) have relatively low explicit and high implicit subsidies.

The IMF examines the emissions effects of the “full reform” of fossil fuel subsidies, both explicit and implicit. It finds:

“The full reform reduces projected global fossil fuel CO<sub>2</sub> emissions 43% below baseline levels in 2030 or 34% below 2019 emissions. This reduction is in line with the 25-50% reduction in global greenhouse gases below 2019 levels needed by 2030 to be on track to contain global warming to 1.5-2.0 degrees centigrade... Globally, around 55% of the CO<sub>2</sub> reduction comes from reduced use of coal, while 31% and 12% respectively are from reductions in consumption of petroleum and natural gas—this reflects the much larger proportionate increase in coal prices from fuel price reform compared with petroleum and natural gas and the larger shares of coal and petroleum in global CO<sub>2</sub>.”<sup>35</sup>

The IMF also examines the economic impacts of such reform. Here it finds:

<sup>35</sup> IMF p19

“Full price reform raises revenues of \$4.4 trillion, 3.6% of global GDP. At the global level, price reform would generate net economic welfare benefits of 3.6% of global GDP equal to environmental benefits of 5.2% of GDP and economic welfare costs of 1.6% of GDP.”<sup>36</sup>

### *International and Regional Disciplines on Subsidies*

International rules have to date proved to be totally inadequate in terms of promoting standstill and roll-back of subsidies that promote harmful emissions. The high watermark is provided by the WTO Fisheries Subsidies Agreement (2022) which prohibits certain forms of subsidies, especially those related to wild capture fisheries. However, prohibiting such subsidies, while welcome in terms of protecting the marine environment, is likely to have only the most minor impact on global emissions. The WTO Agreement on Agriculture (1994), meanwhile, classifies subsidies into domestic support and export subsidies, with domestic support further divided in terms of its impact on trade between green (low impact) and amber box (higher impact). However, even for subsidies classified as impacting trade, there is considerable flexibility for WTO members to continue provision of high levels of subsidy to specific farming sectors.

Overall, the largest problem lies with the almost complete lack of disciplines on fossil fuel subsidies. The generic WTO Agreement on Subsidies and Countervailing Measures (1994) is totally unsuited for these purposes. To give rise to remedies under the Agreement, fossil fuel subsidies must also be shown to satisfy the conditions of “actionable” or “prohibited” subsidies (which include both import substitution and export subsidies). While import and export subsidies are prohibited outright, for any other subsidies, the member taking the action must establish that those subsidies have caused “adverse effects” for its own industry. Very few fossil fuel subsidies take the form of import substitution or export subsidies (many are consumer subsidies) and where they do, action can only be taken on behalf of the fossil fuel industry in another WTO member.<sup>37</sup> To date, therefore, no cases have been taken on fossil fuel subsidies under the WTO Agreement.

The WTO Agreement allows those subsidies that do not have a trade distorting effect to be maintained (and in a sense protects them). Yet, from a climate change perspective, this distinction is irrelevant insofar as fossil fuel subsidies serve to perpetuate emission-intensive industries regardless of their impacts on trade. Worse still, the Agreement could have a chilling effect on those WTO members seeking to provide subsidies to companies to encourage the export of green technologies that could lower emissions in other members. Already several renewable support measures have been challenged at the WTO.<sup>38</sup> The WTO Agreement has the additional weakness in that, unlike the GATT, it does not contain an environmental exception under which subsidies for green technologies might be defended.

---

<sup>36</sup> IMF p20. Revenue would be raised both by decreases in the provision of explicit subsidies and through taxes needed to reduce and eliminate explicit subsidies.

<sup>37</sup> Simon Happersberger, Eleanor Mateo and Selcukan Unekbas, “How to Reign in Fossil Fuel Subsidies: Towards a New WTO Regime, Vrije Universiteit Brussel, 2022

<sup>38</sup> P366 Cleo Verkuijl et al, “Tackling Fossil Fuel Subsidies Through International Trade Agreements: Taking Stock and Looking Forward”, Virginia Journal of International Law, Vol 58:309, 2019

APEC itself has a reasonable record on acknowledging the problems caused by fossil fuel subsidies. In 2009, APEC leaders pledged to ‘rationalise and phase out over the medium-term fossil fuel subsidies that encourage wasteful consumption’, while ‘recognising the importance of providing those in need with essential energy services’. Enhancing transparency of existing subsidies was a first step in this effort. Meeting in Japan in 2010, APEC Energy Ministers instructed the group’s Energy Working Group (EWG) to provide an initial assessment of fossil fuel subsidies in the region. In 2011, APEC Leaders meeting in Honolulu agreed to set up a ‘voluntary reporting mechanism’ that allowed members to self-report progress toward reform. Guidelines for voluntary peer reviews were adopted in November 2013, with Peru as the first to undergo review. Additional reviews were conducted for New Zealand (2015), the Philippines (2015), Chinese Taipei (2016), and Vietnam (2017).<sup>39</sup>

The Aotearoa Plan of Action in 2021, once again committed APEC members to “*rationalising* and phasing out *inefficient* fossil fuel subsidies that encourage wasteful consumption, while recognising the importance of providing those in need with essential energy services”. Earlier in 2021, APEC Ministers Responsible for Trade had agreed “to explore options, for those members that are in a position to do so, to undertake a voluntary standstill on fossil fuel subsidies with progress to be reported to Ministers in November”. At that stage, there was no agreement on a standstill although Ministers agreed to develop a self-reporting framework for fossil fuel subsidies, with work on this taking place in 2022. To date, participation in terms of self-reporting has been limited.

---

<sup>39</sup> Information summarised from Verkuil C and van Asselt H “Governing the Climate-Energy Nexus”, Cambridge University, 2020

## Appendix 1: Explicit and Implicit Subsidies

	Explicit subsidies			Implicit subsidies			Total subsidies		
	<i>US\$ billion</i>	<i>% GDP</i>	<i>capita US\$</i>	<i>US\$ billion</i>	<i>% GDP</i>	<i>capita US\$</i>	<i>US\$ billion</i>	<i>% GDP</i>	<i>capita US\$</i>
Argentina	14	2.5	313	36	6.4	800	50	8.9	1,113
Australia	8	0.5	302	40	2.4	1,519	47	2.9	1,821
Brazil	2	0.1	11	67	3.1	310	69	3.2	321
Canada	2	0.1	47	36	1.9	953	38	2.0	1,000
China	270	1.5	189	1,966	11.0	1,379	2,235	12.5	1,568
Germany	43	1.0	520	86	2.0	1,028	129	3.0	1,548
France	18	0.6	278	46	1.5	714	64	2.1	992
India	32	1.0	23	314	9.6	223	346	10.6	245
Indonesia	78	6.2	285	116	9.2	422	194	15.4	707
Italy	10	0.4	162	54	2.4	910	63	2.8	1,072
Japan	34	0.6	274	276	5.2	2,224	310	5.8	2,498
Mexico	15	1.1	115	83	6.5	657	98	7.6	772
Russia	71	4.0	488	351	19.6	2,423	421	23.6	2,912
Saudi Arabia	129	13.8	3,579	124	13.2	3,418	253	27.0	6,996
South Africa	5	1.2	85	56	12.8	934	61	13.9	1,019
Korea	65	3.2	1,250	97	4.8	1,870	162	8.1	3,120
Turkiye	59	5.9	694	93	9.3	1,098	152	15.2	1,792
United Kingdom	19	0.6	275	55	1.7	823	74	2.3	1,098
United States	3	0.0	9	754	3.2	2,234	757	3.2	2,243
Jamaica	0	0.0	0	1	3.4	195	1	3.4	195
Costa Rica	0	0.1	19	2	2.9	415	2	3.0	435
Vietnam	7	1.7	67	50	12.6	507	56	14.3	574
Ethiopia	4	3.6	33	4	3.8	34	8	7.4	67
Iran	63	10.5	711	100	16.7	1,131	163	27.2	1,842
Morocco	1	1.0	38	13	8.9	340	14	9.9	378

## **Annex 4: Compatibility of Current Trade Rules with Policies to Combat Climate Change**

International and regional trade agreements generally seek to provide a more even playing field for the businesses of participating member economies. This entails a tension with domestic and international rules seeking to curb harmful emissions. To address market failure, these may seek to tilt the playing field in favour of business developing and providing green products and technologies and against business providing emissions intensive products and technologies. As well as the areas already discussed, this tension has implications for trade rules in several other fields, some of which are discussed below.

### *Intellectual Property*

The policy framework behind intellectual property policy and law is itself based on the presence of another form of market failure in that innovation in an economy will be underprovided without compensating innovators with time-limited property rights to provide such innovation. This concept is well accepted internationally and strongly embodied in international rules through the WTO TRIPS Agreement, through various other international agreements (often through the World Intellectual Property Organisation (WIPO) on individual areas of intellectual property and through regional and bilateral trade agreements. While there is agreement on this concept, there is considerable disagreement on the strength of property rights and the nature of exceptions that should be provided under such rules.

It is hoped that intellectual property rights, particularly patent rights, can play a powerful role in stimulating the development of new green technologies. Recent International Energy Agency (IEA) analysis shows that even with the painful process of establishing a price for carbon, current climate targets can only be achieved by a major acceleration in clean energy innovation, as many of the technologies required in the coming decades to bring down CO<sub>2</sub> emissions are only at the prototype or demonstration phase today. It estimates that around half the emissions reductions to get to net zero by 2050 may need to come from technologies that are not yet on the market.<sup>40</sup>

However, a consensus is emerging that currently, patents are poorly suited to the role of stimulating new green technologies. The IEA analysis shows that the growth of the number of patents for clean energy technologies generated amongst its members have risen only slowly, if at all. To explore whether the contribution of patents might be improved, Tabrez Ibrahim has explored several options (particularly in developed economies) for reform. These include eco-patent commons (where green patent holders pledge greater availability of their innovations), fast track programmes (to speed the processing of patents for green technologies) and patents rewards systems for new green technologies.<sup>41</sup> No government has as yet put in place any of these options.

The other vexed question is whether international patents regimes contribute to or hinder the transfer of green technologies, particularly to developing economies. The evidence to

---

<sup>40</sup> "Patents and the Energy Transition", International Energy Agency, 2021

<sup>41</sup> Ebrahim T, "Clean and Sustainable Technology Innovation", Science Direct, 2020

date is that they are poorly suited for this purpose, particularly in the case of poorer developing economies.<sup>42</sup>

### *Regulation and Standards*

Free trade agreements have increasingly involved the negotiation of provisions on regulation and standards across a number of fields. Generally, such provisions have the objective of ensuring that differing approaches to regulation and standards do not inhibit trade and investment between the parties. In the area of climate change, however, cooperation on environmental standards and regulations is particularly important, both to promote trade in environmental goods and services and to provide for the transfer of green technologies, particularly between developed and developing economies. Standards can also be employed in a wider context to drive innovation in carbon markets through such devices such as emissions standards.

The negotiation of FTAs provides a real opportunity to use regulatory cooperation as a means of promoting higher quality emission standards. If framed around a shared commitment to raising ambition, regulatory cooperation efforts could be a vehicle through which governments find ways to better manage their different regulatory approaches to fighting climate change. A commitment to good regulatory practices in FTAs can also promote transparency of different laws and regulations designed to fight climate change. This will be especially important at a time when economies are seeking to put in place dynamic regulations to drive the reduction of emissions.<sup>43</sup>

A key challenge in the area of international regulatory cooperation lies in the fact that the practice of carbon accounting is still in its infancy. Agreed carbon accounting methods need to be applied to allow business and governments from different jurisdictions to compare the impacts of their emissions on a like-for-like basis. Up to the present, the main tool available to business has been the Corporate Accounting and Reporting Standard under the Green House Gas Protocol, the first version of which was released in 2001. It provides guidelines for companies to adopt when disclosing their carbon emissions.<sup>44</sup> However, in a recent paper, Mahto, Mahan and Saxena argue:

“... the practice of carbon accounting still faces several obstacles such as data quality issues, measurement and reporting inconsistencies, platforms that are in silos, and digital infrastructure challenges. Greenhouse gas estimates are subject to significant uncertainty, and most of the largest emitting events under Scope 3 are often difficult to include in inventories. Inconsistencies highlight the need for thorough and open data evaluation. Additionally, capturing Scope 3 emissions involves methodological difficulties, including tracking the carbon content of a product as it moves down the supply chain. Without addressing these problems, it is difficult to compare, combine, and share reliable data. The difficulty of tracking emissions from multiple

---

<sup>42</sup> Hall B and Helmer C, “The Role of Patent Protection in Clean/Green Technology Transfer”, UNU Working Paper Series 045, 2010

<sup>43</sup> Deere-Birbeck, C “Greening International Trade – Pathways Forward”, TESS, Geneva 2021

<sup>44</sup> Under the Protocol, scopes 1, 2, and 3 are used to classify emissions. Scope 1 considers direct GHG emissions from sources under the organisation’s ownership or control. Scope 2 takes into consideration the GHGs emissions produced by the organisation’s use of purchased electricity. All other indirect emissions may be handled under Scope 3, an optional reporting category. There are also three ISO 14064 standards relevant to GHG accounting: the ISO 14064 standards series I, II, and III, developed by the international standards organisation.

suppliers and customers across multi-tier value chains makes it virtually impossible for a company to have a reliable estimate of its Scope 3 numbers. These roadblocks can hinder internal reliability and data exchange.”<sup>45</sup>

### *Investment*

Like intellectual property, FDI has a significant role to play in promoting the diffusion of green products and technologies. Often businesses will be unwilling to introduce green products and technologies unless they can establish an investment presence. The role that FDI can play in promoting innovation in an economy has been well established.

Amid the push for greater public and private investment in the green economy, there are calls for international investment rules to promote emissions reduction more explicitly. While recognising the positive role that FDI can play, care is also needed to ensure that such agreements do not have a chilling effect on governments looking to make regulatory changes to incentivise investment in green technologies.

In this respect, a key climate concern relates to mandatory dispute settlement provisions in these agreements, both at investor-state and state-to-state levels. These grant foreign firms and/or governments the ability to sue governments when they can show that changes to the regulatory environment, including through strengthened or new emissions reduction laws and regulations, reduce the economic value of their investment. Climate change advocates are especially concerned that companies could lodge a growing number of disputes, challenging the implementation of climate policies that harm their business interests. In 2020, for instance, the company RWE initiated an ISDS case against the Netherlands, arguing that government’s effort to phase out fossil fuel subsidies negatively affected an RWE-owned powerplant.<sup>46</sup> Claims have also been brought against Italy and Spain in relation to renewable energy schemes. These risks seem especially high for developing economies which have more limited financial resources and depend heavily on foreign investment.

### *Government Procurement*

There is increasing attention to green government procurement policies as a tool to foster technologies to combat climate change. There is also growing interest in how trade policy frameworks and rules could support the greening of government procurement. Among existing trade rules on government procurement, most have no specific restrictions on the ability of governments to support green procurement, except that the rules require them to refrain from discrimination between domestic and foreign suppliers.<sup>47</sup> As with investment, however, there is some concern that dispute settlement processes under these rules may inhibit governments from quickly putting in place new laws to combat the market failures responsible for climate change.<sup>48</sup>

---

<sup>45</sup> Mahto RK, Saxena S and Mahan K, “Global Standards for Carbon Accounting: An Agenda for G20”, T20 Policy Brief, May 2023

<sup>46</sup> Deere-Birbeck, C “Greening International Trade – Pathways Forward”, TESS, Geneva 2021

<sup>47</sup> Deere-Birbeck, C “Greening International Trade – Pathways Forward”, TESS, Geneva 2021

<sup>48</sup> Rose, J, “Greening the WTO’s Dispute Settlement Understandings: Opportunities and Risks”, New Zealand Treasury Working Paper, 01-28