ICTD

Working Paper 187

A Climate Treaty for the Global Taxation of Carbon

Tatiana Falcão

April 2024

BILL & MELINDA GATES foundation

Norad

UK International Development
Partnership | Progress | Prosperity

institute of development studies

ICTD Working Paper 187

A Climate Treaty for the Global Taxation of Carbon

Tatiana Falcão

April 2024

A Climate Treaty for the Global Taxation of Carbon

Tatiana Falcão

ICTD Working Paper 187
First published by the Institute of Development Studies in April 2024

ISBN: 978-1-80470-188-1
DOI: 10.19088/ICTD.2024.022

Available from:
The International Centre for Tax and Development at the Institute of Development Studies, Brighton BN1 9RE, UK
Tel: +44 (0) 1273 606261 Fax: +44 (0) 1273 621202
E-mail: info@ictd.ac.uk
Web: ictd.ac/publication
X: twitter.com/ICTDTax
Facebook: facebook.com/ICTDTax
LinkedIn: linkedin.com/company/ICTDTax

IDS is a charitable company limited by guarantee and registered in England
Charity Registration Number 306371
Charitable Company Number 877338

A Climate Treaty for the Global Taxation of Carbon

Tatiana Falcão

Summary

This paper aims to highlight the key policy considerations undertaken when drafting the articles that informed the text of the Multilateral Carbon Tax Treaty (MCTT). It is the product of the many comments received from the commentators invited to provide inputs to the MCTT. The MCTT comprises 31 articles that together establish an obligation on contracting states to tax carbon contained in fossil fuel ore or one of its byproducts, at the level of extraction. If the country entitled to tax at the level of extraction chooses not to exercise its right to tax, it allows first the country of refining or processing, and second, the country of consumption, under a secondary and tertiary allocation of rights. The MCTT identifies a minimum carbon tax, but not a ceiling. It provides for different tax rate schedules according to the country's level of development and following the principle of common but differentiated responsibilities. This is an environmental agreement that uses a tax instrument (a carbon tax) to assist countries in meeting the mitigation objective contained in the nationally determined contributions, as set forth in the Paris Agreement. In other words, it is an environmental agreement that enables countries to use a tax instrument to quantify and reduce carbon dioxide emissions in furtherance of the climate commitments assumed under the Paris Agreement.

Keywords: international tax; carbon taxation; climate change; environmental tax; multilateral agreement; carbon pricing; tax treaty.

Tatiana Falcão is a senior policy expert in international tax and environmental taxation, and a member of the United Nations Subcommittee on Environmental Taxation. She holds a doctorate in international taxation from the Vienna University in Economics and Business (WU), an LL.M from New York University (NYU) and an LL.M from University of Cambridge (Cantab).

Contents

Figure

Table

Acknowledgements

This paper is the accompanying text to the Multilateral Carbon Tax Treaty (MCTT). It was developed in consultation with an array of experts with varied fields of expertise in areas related to tax, environment, economics, and law. The author would like to thank all experts for their time and their contributions to the development of the MCTT. The list below recognises the experts who contributed to this work. All experts contributed in their personal capacities.

Alberto Comelli (University of Parma)

Amparo Grau (Universidad Complutense de Madrid)

Aoife O'Leary (Opportunity Green)

David Rosenbloom (New York University)

Erika Siu (University of Chicago)

Femke Groothuis (The Ex'tax Project)

Flaminia Tacconi (Our Fish)

Goran Dominioni (Dublin City University)

Irene Burgers (University of Groningen)

Janet Milne (Vermont Law School)

Jeffrey Kadet (University of Washington)

Joanna Wheeler (IBFD)

Marta Villar Ezcurra (San Pablo CEU University)

Martina Neuwirth (Vienna Institute of Development and Cooperation)

Rebecca Hubbard (Our Fish)

Roberta Mann (University of Oregon)

Ruth Mason (University of Virginia)

Vedant Monger (Shakti Sustainable Energy Foundation)

The author would also like to thank for the comments received from the participants at the Global Conference on Environmental Taxation in 2022 (GCET23), the International Centre for Tax and Development (ICTD) Taxation at a Crossroads 2023 conference, and the private presentation rendered to Tax Justice Network, June 2023.

Acronyms

ASA	Air services agreement
BCA	Border carbon adjustment
CBAM	Carbon Border Adjustment Mechanism
COP	Conference of the Parties
DSB	Dispute settlement body
ETS	Emissions trading scheme
EU	European Union
GATT	General Agreement on Trade and Tariffs
GHG	Greenhouse gases
ICAO	International Civil Aviation Organization
ICJ	International Court of Justice
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
IRA	Inflation Reduction Act
MCTT	Multilateral Carbon Tax Treaty
MEA	Multilateral environmental agreement
NDC	Nationally determined contribution
UNCLOS	UN Convention on the Law of the Seas
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
WTO	World Trade Organization

1. Introduction

On 15 July 2022 I launched an email to a list of roughly 100 professionals in the fields of international taxation, tax and public policy, economics, environmental economics, and other similar disciplines, asking for inputs on a base text for a Multilateral Carbon Tax Treaty (MCTT).

On that occasion I said:

> The objective in suggesting a multilateral carbon tax treaty is to strive to obtain consensus between policy makers, academics, intergovernmental officials and civil societies at this initial stage where carbon taxation is still incipient. As you know, carbon tax is currently not widespread across the world, and there is no uniform approach between the countries and regions where it is adopted. The aim is to achieve a single text that is the product of an ample consultation process with experts in the fields of environmental law, environmental economics, tax law and public policy. The feedback of experts would allow us to draw up a model treaty that would reflect, from a technical perspective, the most optimal instrument to tax carbon on a multilateral basis. This is an exercise that should be stripped of any political consideration. The purpose is to create an optimal carbon tax treaty, both from an environmental efficiency perspective and from a tax technical perspective.
>
> The object of the treaty itself is very narrow: to create a binding obligation for countries to apply a carbon tax, as upstream in the consumption chain as possible.

If I could borrow from Martin Luther King, I had a dream to devise the text of a treaty that would be deprived of political considerations and as technically correct as it could be in getting the double dividend dimension of a carbon tax right. Meaning, a tax treaty that would by its own mechanics impose an upstream carbon tax on a cross-border basis in the country from where the fossil fuel is first extracted, and in that way obtain not just an economic gain, but also an environmental benefit to society at large. The rationale was that such a treaty would eventually need to undergo political negotiation that would move the text away from the optimal solution derived from the academic literature and into a consensus approach that is acceptable to all, or at least in a first moment, most countries across the world. Departing from a text that is aligned with the environmental commitment of keeping to 1.5°C in the Paris Agreement would be a way of setting the benchmark of the political negotiations.

The MCTT is in itself an international instrument, a tax treaty, albeit not in the sense that we are used to when dealing with income tax treaties. It sets a commitment for countries to tax carbon, which is very unusual in the dynamics of

international taxation. It sets rules of prominence in exercising the taxing right to avoid double emission counting and, as a result, double taxation of the same tonne of carbon pollution.

The most recurrent argument applied to question the form in which this carbon tax is employed is that tax policy is a topic that is almost intrinsically attached to a State's sovereignty. The right to tax is not a supranational right, in that there is no overarching tax authority in charge of imposing a global tax, irrespective of its type. It is up to each country to exercise its right to tax within the boundaries of its jurisdiction. Furthermore, the establishment of an international consensus via a binding tax treaty (not a model) in a way turns international tax policy as we know it upside down. Historically, model tax treaties reflect country practices that are recurrent, elevating them to 'best practices' that would be assimilable to rules of international law, for tax purposes. These model treaties are then in turn used to guide future practices and standards for negotiation of tax treaties.

The MCTT establishes *the* international tax practice before countries have had a chance to consider it within their domestic systems (for most countries across the globe). That is why the approval of a multilateral carbon tax treaty at this stage can be a facilitator for the introduction of domestic tax legislation. To the extent that countries agree with the mechanics of the international approach to taxing carbon, they can merely reproduce that as a best practice into their domestic tax legislation. The international consensus may also be an important factor in getting taxpayer support in the passing of such a legislation, and in dissolving the strength of corporate lobbying when it comes to the establishment of the tax rate at a level that is significant, from an environmental perspective. Although it is uncharted territory for international tax policy, it is quite the opposite when it comes to the application of universal environmental rights and the exercise of environmental protection.

Environmental law is a subgenre of international law and within that field the practice is to establish binding rules that are referred to as principles of customary law. Customary law regulates the global commons, dictating the rights of states over the use of and the rights to explore terrestrial assets like the international waters, the high seas, and airspace. Following that premise, under the field of environmental law, a number of environmental agreements have been concluded to define best practices when it comes to controlling temperature increase in our atmosphere via (among other instruments) the pricing of carbon emissions. These agreements are, in chronological order, the United Nations Framework Convention on Climate Change (UNFCCC) (United Nations 1992a), the Rio Conference and Declaration (United Nations 1992b), the Kyoto Protocol (United Nations 1998) and finally, the Paris Agreement (United Nations 2015). From this perspective, carbon taxation is only one of the instruments that

countries can resort to when mitigating[1] the impacts of climate change. Carbon taxation is, by common agreement by the international community, one of the most efficient instruments within the array of carbon pricing tools capable of providing a price incentive to reduce consumption of carbon intensive fuels and goods. However, it is only *one* of the carbon pricing options available to countries. I will revert back to this topic later in the paper.[2] The important point I would want to make here is that an MCTT is as much a tax policy instrument as it is an instrument of environmental law, of customary international law and of climate change mitigation. The UNFCCC and the Paris Agreement have set the targets and goals for the mitigation of carbon emissions. The MCTT would in that sense merely execute what is already foreseen in those agreements. It is implementing customary international environmental law.

There are many benefits in working towards a consensual *de minimis* multilateral carbon tax approach even in an environment where domestic carbon taxes are not widespread:

- First, there is the global dimension of carbon-based pollution and the environmental commons in that a tonne of carbon emitted into the atmosphere can move beyond geographic borders and across legal systems, and through time, also impacting future generations.
- Secondly, there is the equitable nature of a carbon tax that has two dimensions to it:
    - there is a push to equalise carbon taxes across the world using a consensual approach that is to the benefit of all the countries involved in that process; the equitability comes from having all countries involved in the setting of standards thereby legitimating the rule that determines the allocation of taxing rights.
    - it equalises consumption patterns by using carbon-laden fuel sources as the pricing benchmark. By internalising the carbon equivalent externality via a carbon tax, every additional tonne of carbon in a particular fuel source is accounted for in the final price. Green and brown energy sources can hence compete in parity of conditions, in an environment where the least carbon intensive product receives the lowest price. Consumers that are sensitive to the price difference will hence seek to consume more of the low carbon fuels and products, fostering the green transition process. The mechanics are more pronounced in middle- and low-income countries where the proportion of low-income consumers is highest and therefore even a small price difference can cause a change to a consumption pattern.

[1] Mitigation goals denote actions aiming at the reduction of carbon dioxide emissions and other greenhouse gases. Most mitigation actions concern the application of a fiscal instrument to price carbon.

[2] The interaction between carbon tax and a carbon price is discussed in section 3.3 of this paper.

    - equity is also derived through the allocation of a portion of the revenues towards a fund of common use.[3]
- A global framework can stimulate free trade in that it avoids double taxation by establishing a rule of prominence in the incidence of the tax.
- By privileging upstream taxation, there is no direct correlation between the sovereign right to tax and a country's level of development. Assuming all countries participate in the MCTT, the winners in a global system are those countries with the biggest territory and/or the greatest accumulation of natural resources.
- In terms of impact, a carbon tax produces the highest impact when a country is high in carbon intensity, which is a reality for most middle- and low-income countries in the short term.
- A carbon tax can eliminate distortion in the application of other indirect taxes, like VAT and ad valorem excise taxes, to the extent it provides price parity between green and brown products,[4] hence eliminating implicit subsidies to the products produced using default (brown) energy sources.
    - This in itself features as an indirect incentive towards the development of alternative clean energy sources that are reliable and can be consumed at vast levels in production processes.
- A carbon tax levied at the point closest to extraction or import into a country requires very little oversight and verification by tax administrations, therefore it is very difficult to evade.
    - Furthermore, carbon intensive fuel distribution systems are global, meaning there are fewer opportunities for avoidance. Avoidance of tax, if any, when exercising the presumptive taxing right will most likely be recouped under the secondary or tertiary allocation system. There would be a loss in emissions pricing, but it is unlikely multiple parties would be able to collude to avoid paying the tax, since countries would be interested in receiving the revenue allocation.
- A uniform approach to the application of a carbon tax at national and supranational level can provide uniformity in the application of the rules and reduce potential for tax and trade litigation in the long run.
- Finally, a *de minimis* benchmark can help achieve the goals set in the Paris Agreement and, over time, provide the base upon which other policy instruments are applied to complement the carbon tax policy.
    - The scope of the MCTT in itself can also be expanded over time by: (i) expanding the tax base to cover carbon dioxide equivalent emissions (meaning other greenhouse gases resulting from carbon combustion), (ii) expanding the scope of the instrument, so that the

[3] Article 18 of the MCTT.

[4] Green products denote low carbon products or fuels; brown products denote carbon intensive products or fuels.

treaty is not just promoting a carbon tax, but also a carbon price, (iii) increasing the tax rate according to the tax rate schedule,[5,6] and (iv) expanding coverage to include also fossil fuels used in the production of non-biodegradable plastics.

1.1 The politics

Even if the objective is to derive a text for the MCTT that is deprived of political considerations, it is impossible to remove it from the moment it is set to exist in. There is a positive momentum for the consideration of an instrument of the likes of the MCTT, that is principally marked by the African Leaders Nairobi Declaration on Climate Change (African Union 2023: 19, para. 57) issued following the Africa Climate Summit in September 2023,[7] urging 'world leaders to consider the proposal for a global carbon taxation regime including a carbon tax on fossil fuel trade, maritime transport and aviation, (…) to provide dedicated, affordable, and accessible finance for climate-positive investments at scale (…)'.

This has been topped by the Conference of the Parties (COP28) Decision of 2023 that has been claimed to mark 'the beginning of the end of the fossil fuel era'. The deal called on countries to contribute to global efforts to transition 'away from fossil fuels in energy systems in a just, orderly, and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science'. The decision also calls for the phase-down of unabated coal and acceleration of zero and low emissions technologies including renewables (UNFCCC 2023a: paragraph 28 (b), (d) and (e)).

As is customary with non-binding soft law political commitments, the form by which countries will transition away from fossil fuels is open for each country's consideration. However, the commitment strengthens the case for the use of a carbon tax as a tool to transition away from fossil-based energy sources and into renewable forms of energy.

In addition to that, many other initiatives continue to pursue some level of multilateral unified approach to the pricing of carbon. The most relevant approach in practical terms is the EU Proposal for a Carbon Border Adjustment Mechanism (CBAM) (European Union 2023) that in practice pushes for the establishment of a corresponding carbon tax system in the countries that are principally impacted by the EU's CBAM.

[5] Article 8 of the MCTT.

[6] These issues are further discussed in section 3.3.

[7] The Africa Climate Summit can be accessed at: www.africaclimatesummit.org

In addition to that, coalitions championed by countries that are advanced in climate pricing techniques are growing in number.[8] For example, Canada launched in 2021 during COP26 a Global Carbon Pricing Challenge that calls for a partnership of carbon pricing champions from around the world to expand the use of carbon pricing by strengthening existing systems and supporting emerging ones. The goal of the coalition is to reach the collective goal of covering 60 per cent of greenhouse gas emissions by 2030.[9]

Finally, there is growing pressure mounting from Small Island States that are expected to be severely impacted by climate change and by rising sea levels. Outside the sphere of the discussions occurring under the Conference of the Parties, one occurrence worthy of mention has been the adoption of UN General Assembly Resolution (UNGA) 77/276 championed by Vanuatu, requesting an advisory opinion from the International Court of Justice (ICJ) on the obligation of States in respect of climate change (UNGA 2023a). The UNGA Resolution asks 'what are the obligations of States under international law to ensure the protection of the climate system and other parts of the environment from anthropogenic emissions of greenhouse gases for States and for present and future generations'. It also asks what the legal consequences of States' acts and omissions are when they lead to severe climate harm.

The growing number of initiatives from countries that have a history of furthering carbon pricing instruments that foster climate mitigation goals, combined with the growing pressure from countries now severely impacted by the effects of climate change, potentially compromising their own existence, have led to a momentum that calls for change. The MCTT is put forward as the instrument capable of making the first of many moves towards equitable change, that takes into account the economic capabilities of each of the countries through the implementation of differentiated carbon tax rates.

[8] In theory, countries could also choose to employ an emissions trading scheme (ETS) in lieu of a carbon tax. However, ETSs take on average five to ten years to be implemented – which means that the timeframe for implementation of a regulated market-based approach would deter from achieving the immediate objective of pricing emissions in the country of source, rather than having them priced in the country of destination (in this case, the EU). Also, countries introducing novel ETSs tend to grandfather emissions permits at the initial phase of the project, reducing the impact of the regulated market at domestic level, and making the price an implicit one for as long as the permits are exempted/grandfathered. Finally, the only reason why countries will consider responding to a CBAM is to allocate revenue resources to the country where the emissions are in fact issued. It is a form of financing the energy transition process through a market instrument. The ETS is not capable of responding to the demand of a regime that is already in force, on a short-term basis, hence leading to an overall loss in financing capacity by the country impacted by the CBAM.

[9] Global Carbon Pricing Challenge, https://www.globalcarbonpricingchallenge.org/

1.2. Structure of this paper

The objective of this paper is to portray some of the key points raised by the commentators, and in some way document the exchanges had with the many colleagues who took their time to provide comments on the text. As I wrote to them in more than one email, this project could not have existed without their inputs, and therefore I would like to ask the reader to take one minute to read carefully through the names in the acknowledgements list that precedes this paper.[10]

This paper is organised as follows: section 2 provides a quick overview of the mechanics of the MCTT, focusing less on the technical details and more on the interaction between the different articles. Of course, I could never totally strip this treaty from its political considerations. In fact, many if not all the commentators were fast to point out political issues concerning domestic implementation and acceptability in one or more countries. Section 3 therefore considers the main arguments relating to acceptability, enforceability and legitimacy. Section 4 then puts forward some of the technical issues arising from the correspondence with experts. Section 5 discusses revenue use and section 6, the governance structure of choice for the MCTT. Section 7 concludes.

The MCTT was drafted having in mind all the international agreements that preceded it in the fields of environmental and tax law, and the agreements that one could expect to derive from it in the future. As a result, careful consideration was taken to link its targets to those that have been pre-agreed via the Paris Agreement, and to use the terminology that is common to the existing international environmental agreements. For example, the principles of environmental taxation subscribed to in Article 3 of the MCTT are repeatedly put forward in the UNFCCC umbrella convention, the Rio Declaration, the Kyoto Protocol and the Paris Agreement (Falcão 2019a). The objective of the treaty accounts for the World Trade Organization (WTO) Appellate Body decision in *US-Gasoline* (WTO 1996c: para 6.24) by referencing protection of clean air as one goal.[11]

[10] The list is reflective of the commentators who accepted being named in this paper. The author also thanks the anonymous contributors for the comments they provided.

[11] Article 2 of the MCTT.

2. How the treaty works

The MCTT establishes a commitment by countries to tax carbon with the objective of reducing emissions in the atmosphere to a level that would prevent dangerous anthropogenic interference with the climate system and would protect clean air.[12] These commitments are in line with the objectives of the Paris Agreement, where it is established that dangerous anthropogenic interference with a climate system arises if carbon dioxide concentration in the atmosphere reaches 550 parts per million or the world experiences an increase of 2 degrees centigrade in average global temperatures as compared to pre-industrial levels.[13]

Furthermore, the commitment set by countries under the MCTT is aligned with the predominant jurisprudence of the World Trade Organization, in that it furthers the carbon tax with the objective of conserving clean air.[14] This makes both the carbon tax, and any type of multilateral concerted agreement to employ a border carbon adjustment (BCA) measure towards countries choosing not to ratify the MCTT, admissible under the General Agreement on Trade and Tariffs (GATT). Aligning the objective of the agreement with the WTO jurisprudence also meets the governance structure of the MCTT, which is jointly overseen by the UNFCCC and the WTO, as further explained in section 6.[15]

The treaty works by creating three separate rules of allocation of taxing rights: the presumptive (or primary), secondary and tertiary rule of taxing rights. The presumptive rule is for the fuel to be taxed at the country (and moment) of extraction, so that the tax can capture the whole carbon emissions potential of the crude oil prior to submitting it to any processing activity. This is established to be the main rule because extraction denotes the moment of the fossil fuel supply chain with (i) the least number of tax payers, (ii) the greatest carbon coverage (because no emissions have been lost as part of transport or transformation processes), and (iii) the least potential for tax evasion, since there is a direct correlation between the crude oil, coal and natural gas and its carbon emissions potential as measured in tons of carbon. Many agencies provide for carbon

[12] Article 4 of the MCTT.

[13] Article 2 of the MCTT, as aligned with Article 2 of the Paris Agreement.

[14] The *US-Gasoline* decision recognises that clean air is an exhaustible natural resource that could be exhausted as a result of pollutants like those emitted through the consumption of gasoline. As a result, it includes fossil fuel products within the context of the public policy exception of Article XX(g) of the GATT, and recognises that a border carbon adjustment measure would be admissible in respect of fossil fuel products provided certain requirements are met. See in this respect: Falcão 2021d: 485 and Falcão and Englisch 2021.

[15] Article 21 of the MCTT.

intensity estimates that could be easily applied by an extractive country using the volume of crude oil extracted from the ground as a proxy.[16]

The rules of secondary and tertiary application were created in the acknowledgement that not every extractive country might be willing to introduce a carbon tax. These rules therefore exist not just to capture the untaxed carbon content in case the country of origin chooses not to exercise its taxing right under the MCTT, but also to exercise pressure on extractive countries to employ a carbon tax at the level of extraction. Not doing so means that the country in question is waiving its sovereign right to tax and transferring it to a third country further in the midstream or downstream segment of the supply chain.

Under the rule of secondary allocation, the carbon tax is applied at the midstream phase of the value chain, meaning the country where crude oil and natural gas are refined or processed into their byproducts. This could be the same country as the country of extraction or a different country. Coal has no midstream phase, as it does not undergo substantial transformation prior to final consumption. The rule of tertiary allocation concerns the country of consumption, meaning the country where these fossil fuels will be used or combusted as an energy source. Irrespective of the phase at which the carbon tax is employed, it is suggested that it be employed at the upstream segment of the country's domestic fossil fuel value chain. Therefore, if secondary or tertiary allocation rights apply, the fossil fuel, whatever its form, should always be taxed upon import to the country in question, or as close as possible to the import phase. That is to capture the whole polluting potential of the fossil fuel prior to entering that economy, and to allow the carbon tax to burden the entire economy, thereby including the formal and informal segments.

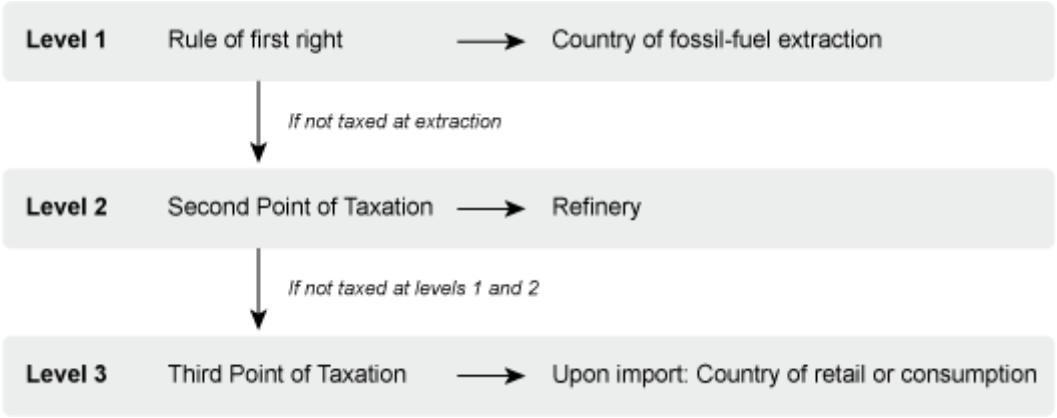
Since the carbon tax is employed at the upstream level of every country owning the right to tax, the tax is always calculated based on the fuel's estimated carbon content. There is no need to monitor, review and verify (MRV) emissions for the purposes of the tax per se. At secondary and tertiary allocation levels, countries who are party to the MCTT may choose to account for the fugitive emissions deriving from the preceding untaxed segment. This is not a mechanism that is a priori inbuilt as an MCTT function. The contracting states would need to agree on a methodology to account for those fugitive emissions and gross up their

[16] The Greenhouse Gas Protocol (https://ghgprotocol.org/) is nowadays known to be the most widely used greenhouse gas (GHG) accounting standard. It has been adapted and applied at national level, and has country subchapters such as, for instance, the Brazilian Program of the GHG Protocol. However, other standards exist, and estimates have been provided by the following agencies, for example: (i) IPCC 2007a: 293; (ii) Hong and Slatick 1994. Footnote 5 therein argues that '[p]otential carbon dioxide emissions can be calculated by use of the following formula: percent carbon ÷ Btu per pound × 36,670 = pounds (lbs) of carbon dioxide per million (106) Btu'.

respective tax bases to the amount of fugitive emissions that were left unaccounted for.

Fugitive emissions are defined in the MCTT[17] as the unintended leakage of emissions from the handling of fossil fuels. These are, for example, in secondary allocation, the emissions that were released from the time the fossil fuel was extracted to the time it entered the country of secondary allocation for refining or processing. Under this rule, therefore, the country of secondary allocation can estimate the emissions released from extraction to refinement based on a commonly agreed approach and opt to tax that at its own initiative. This would be the second-best option to having the tax employed from the point of extraction.[18]

Figure 2.1 Overview of rules on allocation of taxing rights



Source: Falcão 2019a, © IBFD, used with permission.

Extended research was conducted on which would be the winning and the losing countries under each of the allocation rules (Falcão 2019a, chapter 6: 209–216). In a nutshell, non-OECD economies, meaning middle- and low-income countries would mostly be advantaged with the rule that determines the application of a carbon tax at the point of extraction. The rule of secondary allocation is more equitable in the split between OECD and non-OECD economies if one excludes the United States, which is the country with the greatest amount of refining capacity in the world. The rule of tertiary allocation privileges OECD and high-income countries the most as the countries with the largest consumption of fossil fuel energy sources. Intuitively, since high-income countries are also the countries with the most experience of taxing carbon (the European Union in

[17] Article 1(v) of the MCTT.

[18] See, in this respect, IPCC 2000: 103–127. On coal fugitive emissions see also IPCC 2006a.

particular), it would be expected that these would be the countries most prone to adhering to an MCTT proposal. Agreement by a few countries would be enough to spur interest up the value chain, as the application of a carbon tax at any level outside the point of extraction would imply another country's loss of presumptive revenue generation ability. The MCTT foresees the application of a BCA, which in a way also works as an incentive for countries located further upstream in the fossil fuel supply chain to join the multilateral system.

It is to be noted that the adherence of countries to the MCTT, exercising the presumptive rule, does not necessarily mean a complete loss in revenues for the refining and/or consumption countries even under the utopian situation where all the tax is employed at extraction level. That is the case because fossil resources are widespread across the world in a fairly even geographic distribution. Since no one country contains all qualities of oil and gas, these have to be traded widely between countries and geographic locations, which is the reason why fossil fuel trade is so internationalised in the first place. International trade of coal is much less prominent, with 85 per cent of the coal extracted being consumed in the country where it derives from.

In addition to this, Article 9(2) should be interpreted together with Article 8 of the MCTT in considering the effective tax rate schedule. Article 8 discusses the tax rate schedule for low-, middle- and high-income countries, proposing different schedules according to the level of development the country fits into, in direct application of the principle of common but differentiated responsibilities. The rates proposed in the MCTT are minimum tax rates, or tax rate floors, allowing countries to employ higher nominal tax rates if they so wish. The objective is to allow countries to employ as high a carbon tax rate as they are ready to employ and not limit those countries with a long and successful history of taxing carbon as an externality.

There is extensive economic literature on how to quantify the social cost of carbon and in that way establish what would be the 'optimal' carbon tax rate.[19] This paper will not go into this discussion per se. The tax rates are not defined in the text of the MCTT, since it is assumed that this would be the object of political negotiation. However, it is contended that these should be high and significant

[19] Pigou (1932) argues that the ideal Pigouvian tax should be set at the marginal social cost for society. That means it increases over time, since the social cost of carbon increases with every additional tonne of carbon that is released into the atmosphere because of the increase in pollution intensity.

Coase (1960) suggests having a cost benefit analysis.

In modern economic literature, some suggest that the tax rate should equal the cost of carbon and health impacts of diseases resulting from those emissions. The fact that these costs are not yet being taken into account contributes to the environmental gap (Parry, Veung and Heine 2015).

enough to meet the Paris Agreement goals[20] and provide economic stimulus to change consumer consumption patterns. The tax rate should be high enough to finance the green transition process through technology development and innovation. Revenues, and as a result the tax rate, should be significant for the private initiative to want to save on carbon emissions and invest in cleaner and more technological energy sources.

Article 2 of the MCTT sets the objective of the agreement and aligns it with the objective set in Article 2 of the Paris Agreement to achieve the stabilisation and reduction of carbon-based emissions in the atmosphere in particular to a level that would prevent dangerous anthropogenic interference with the climate system. This is an intentional alignment aimed at avoiding a race to the bottom when setting the tax rate. It means that for the objective of the MCTT to be fulfilled, the minimum tax rate applicable to low-income states (that will be paying the lowest benchmarked tax rates) will have to be sufficient to meet the Paris Agreement target of holding the increase in the global average temperature to well below 2°C above pre-industrial levels. Therefore even if there is differentiation in the level of tax under the common but differentiated responsibilities framework, the minimum tax rates established under the treaty will need to be high enough to meet the climate commitment.

A practical approach is suggested for the setting of the tax rate. A simple cost analysis could be considered to establish the initial tax rate that should be considered as a carbon price floor for low-income countries – those that under the structure of the MCTT would be subject to the lowest taxes. The cost analysis could use the Intergovernmental Panel on Climate Change (IPCC) estimates as a benchmark in prorating the appropriate tax rate. According to the IPCC, the tax rate should be set between USD20 to 80/tCO2e by 2030 and USD30 to 155 by 2050 per tonne of carbon in order to meet the Paris Agreement goals.[21] A significant tax rate for low-income countries might therefore be around USD30 (Parry *et al*. 2014) per tonne of carbon in 2024.[22] As a consequence, middle- and low-income countries would take a higher starting base line for their respective tax rates. These rates would be adjusted for inflation over time, but also perhaps

[20] Nicholas Stern has predicted losses of 5–20 per cent of global GDP per annum if the targets of the Paris Agreement are not met (Stern 2006). On the other hand, according to Black, Parry and Zhunussova, 0.5 to 2 per cent of GDP in revenues is enough to meet the Paris Agreement Goals.

[21] According to the IPCC, 'Modelling studies, consistent with stabilization at around 550 ppm CO2-eq by 2100 (see Box SPM.3), show carbon prices rising to 20 to 80 US$/tCO2-eq by 2030 and 30 to 155 US$/tCO2-eq by 2050. For the same stabilization level, studies since TAR that take into account induced technological change lower these price ranges to 5 to 65 US$/tCO2-eq in 2030 and 15 to 130 US$/tCO2-eq in 2050.' See IPCC 2007a: 19.

[22] Elsewhere it has been argued that any carbon tax, even an extremely low one, would be positive provided there is a clear tax rate schedule for consistent increases over time. However, this approach would not be ambitious enough to meet the Paris Agreement goals, the reason why it is not being upheld for this proposal (United Nations 2021).

revisited in light of how well measures respond to the mitigation of emissions over time.

From a political economy perspective, the tax rate should start low and should progress over time. Since the fossil fuel industry relies on long-term investment and is high on capital investment, the MCTT suggests a 50-year schedule with ad hoc tax rate increases which are more often in the beginning and more spaced out towards the end. This long-term approach provides investment foresight and legal certainty for the fossil fuel industry and other energy intensive businesses that rely on fossil and non-fossil energy products, in that they can plan for the additional cost burden deriving from the use of carbon as an externality. It also provides significant time for businesses to adapt to the new low carbon technology reality. At the domestic level, a 50-year schedule might not be aligned to the government cycle of short-term parliamentary/presidential mandates. However, the commitment to join the MCTT might be enough to link the government budget of contracting states at national level to the carbon tax rate schedule agreed internationally, hence creating political space to make the required fiscal adjustments on the ground.

Going back to the winners and losers of the MCTT and the interaction between Articles 8 and 9(2) of the MCTT, it is provided in the text of the MCTT that a BCA measure 'may be employed, at a Contracting State's discretion, towards another State when the latter's effective tax rate is 10 per cent or more lower than the tax assessed domestically by the former'. This means that where the spread between the tax rate of the low-income country and that of the high-income country is wider than 10 per cent of the tax rate so applied, the country employing the higher tax rate can chose to employ an adjustment towards the country employing the lowest tax rate, in order to provide parity of treatment between imported and domestically produced fossil products. This would in practice eliminate any risk of leakage. In addition to that, the operation of Article 9(2) provides high-taxing countries (who might not necessarily be high-income countries, because the benchmarked rates act as mere floors) with the possibility of accumulating additional revenues by 'topping the rate' in proportion to the carbon tax applied nationally by that contracting state. This feature would in itself provide a further incentive for the tax rate schedules between low-, middle- and high-income countries not to be too disparate. At the same time, the MCTT still obeys the principle of common but differentiated responsibilities and common capabilities, in that it allows greater time, or more leeway, for middle- and low-income countries to achieve the carbon tax target. This inward-looking BCA measure (applied towards other MCTT contracting states) sunsets in 2075, the time when it is expected that the three tax rate schedules will fuse into one single (high) tax rate. This rate will be consistent with the IPCC carbon price projections and with the Paris Agreement goals.

This is a necessary provision, even if an optional one, to avoid competition between MCTT members. Take the example where an extractive country A applies the minimum tax rate of USD30, selling its crude oil to a high taxing country B applying a tax of USD80. Were there not to be an internal BCA feature, the MCTT would act to provide an indirect incentive for the consumption of foreign derived fossil fuel from country A, instead of acquiring nationally derived fossil fuel byproducts. The treaty would work to privilege the products deriving from countries applying the lowest tax rates. The internal BCA mechanism aims to correct that, by levelling up the overall price according to the highest prevailing rate in any given transaction.

Article 9(2) might become inoperative between some contracting states if there is parallel agreement to create a climate club and to agree on the application of an MCTT-based BCA towards non-signatory states. If that is the case, there will have been a common agreement between those states for the formation of a block that is outward looking. The application of the BCA towards third parties (non-signatories to the agreement) will be discussed in greater detail in section 4.

The tax rate will be indexed according to a composite rate of mixed currencies, denominated 40 per cent in euros and 60 per cent in dollars. A recurrent remark made by the commentators was to diversify the array of currencies under which the indexation occurs. Some remarked that adding emerging market currencies such as the Yen, the Yan and the Ruble might encourage buy-in by other countries. While the point was taken, the text was left unchanged under the author's own experience with emerging markets and unexpected currency devaluations that are based on investor projections in risky markets. The objective underlying this provision in the first place was to have some level of readjustment according to inflation, using a consumption readjustment index so that the nominal tax rate does not lose value over time. Since fossil fuels tend to be denominated in dollars or euros when traded internationally, these were the currencies of choice, but there could be flexibility to also include other emerging market currencies from significant emerging markets.

The last remark concerning the actual mechanics of the MCTT regards the application of Article 14(1) where an actual prohibition is instated to stop contracting states from using negative price incentives such as credits, subsidies and tax rate reductions at national level, in direct opposition with the policy objective intended via the MCTT. Subsidies, credits and tax rate reductions have the effect of reducing the overall carbon tax even if they can be considered integral to the computation of a domestic carbon price, as will be further explained in section 4. Unilateral concessions would add complexity to the tax system and deter from the objectives perceived via the MCTT therefore they are forbidden under this context.

Finally, since the objective is to impose a tax on the expected carbon emissions using carbon as a proxy, a tax credit or reimbursement is allowed when the

carbonic material is not consumed in a combustible reaction. This rebate process was denominated a reverse charge mechanism, aligning with the practice in other indirect consumption taxes, like VAT.

This feature of the treaty implies that companies using a fossil fuel product to produce final products that derive from petrol and therefore are not burnt in a combustion process (like, for example, plastic) could get a credit back for the tax charged at the upstream level. This mechanism aims to address the fact that not all the fuel extracted is actually geared towards the generation of energy, which contributes to the increase of carbon dioxide emissions in the atmosphere.

While this is indeed the case, and the objective of the MCTT is to address carbon dioxide emissions only, it is to be noted that this feature could be employed in order to expand the scope of the treaty after an initial period of implementation.

One way countries could aim at addressing the issue of plastic pollution, for example, or plastic production overdrive (and indirectly provide an incentive for the development of other biodegradable products), could be via a reduction of the amount of credit entitled under the treaty (i.e. by denying 100 per cent credit for the carbon tax paid when the product for which the fossil fuel is employed is an environmentally harmful product), or to deny the credit altogether. Such a policy choice could over time reduce the incentive to produce plastics from fossil fuel products and provide an incentive for the development of plastic materials that derive from other biodegradable products. Such a policy could contribute to the preservation of biodiversity and life in the sea (SDG 14), and be linked with Article 12 of the MCTT.[23]

[23] For a thorough review of the interaction between carbon pricing, plastic production and the fossil fuel industry, see Mann 2022. Her research denotes that a carbon tax alone would fulfill the purpose of reducing GHGs from plastic production using fossil fuels, because it would at least address the emissions from transport. According to her: ‘Use of fossil fuels as a feedstock for plastic creates significant carbon emissions, largely due to extraction and transport of the fuels. Using fossil fuels to manufacture plastic emits even more GHGs. Therefore, using renewable energy to manufacture plastic would reduce the climate impact of plastics, if not the waste problem’ (Mann 2022: 24).

3. Political economy issues

Even if the objective of the MCTT is to come up with a practical solution that is technically correct from climate, legal and economic perspectives, it is clear that there will be some political issues to overcome if it is really to be implemented in practice. Some of the design features of the MCTT are meant to address these, as discussed here.

3.1 Binding treaty and framework setting

The MCTT is not an agreement to agree in the future. Unlike the Paris Agreement, where the clauses establish targets that are programmatic and thus achieved via the implementation of complementary policies, the MCTT is a binding agreement for the adoption of one climate policy: carbon taxation. It is not a model, it is a binding treaty. However, it is clear that in this particular case, becoming a party to the MCTT will have direct impacts on a country's national tax system. Once a country ratifies the MCTT, it will then have to introduce a corresponding carbon tax at domestic level, following the framework that has been instituted via the MCTT. So in this sense, the MCTT can act as both a binding treaty and a framework setting policy instrument, with the power of uniformising carbon tax policy implementation across different countries and tax systems across the globe.

3.2 Acceptability and ratification

A recurrent comment that is indeed not to be taken lightly concerns the acceptability of the MCTT, meaning whether it would outlive the requirements for ratification of a treaty through a state's internal proceedings; That the lack of support and minimum voting requirements could act as a constraint against the adoption of the MCTT even if it is ultimately signed by the executive. This is indeed a problem that is difficult to tackle, as 193 countries across the world means that if there were universal acceptance of the premise of the MCTT, it would have to undergo the scrutiny of 193 government proceedings.

Having said that, experience has shown that even if a particular policy does not resonate with the political inclination of a particular government or its house of representatives, international pressure and the concern that a country might be losing out on a particular resource – in this case, revenues – could pose as a significant enough drive to build consensus within a country or government. There are a few examples to demonstrate that this could work for small changes in the tax or regulatory system that do not imply a complete overhaul of the tax system (like BEPS pillars 1 and 2 do).

For example, to keep it within the realm of tax and climate, the European Union (EU) regulation for a CBAM (EU 2023) was the first time a region actually attempted to equalise and internalise the foreign carbon cost of production. Doing so has had the effect of granting the EU the first mover advantage, by allowing it to increase its revenue collection ability, even if that is not necessarily one of the policy objectives. On the other hand, it also has the effect of detracting from a third country's own right to benefit from the revenues derived from the application of a domestic carbon tax or price. That is because the regulating country (in this case, the EU), is employing the BCA in lieu of the country of origin, and it will use the revenues derived from the application of the BCA toward its own budgetary objectives.

The intended and unintended impacts of the CBAM proposal did not go unnoticed by other countries (like the USA, Canada, Taiwan, Korea and others) who themselves started considering the introduction of BCA measures. In the specific case of the USA, where there is no domestic explicit carbon pricing system (carbon tax or emissions trading schemes (ETS)),[24] the second-best option adopted by the government was the passing of the Inflation Reduction Act (IRA) (White House n.d.), a bill that aims to promote clean energy investment and electrification of the energy grid, and stimulate carbon capture and storage activities through government intervention.[25]

Immediately after the publication of the IRA, there was speculation about whether this bill was in any way connected with the US BCA proposal.[26] If that were to be the case, then the next step would be for the US government to request the recognition of the equivalence of these regulatory practices to a carbon price (Coase 1960: 5,6). That could well still be the case, after the implementation of the IRA. The issue there is how to define the criteria to establish a carbon price that is based on a regulatory measure. This point is further discussed in section 3.3 below. Suffice to say that if the US were capable of establishing that these measures correspond in practice to a national carbon price, it would be able to (i) request recognition of that price to the EU and a corresponding adjustment (or

[24] The US has regional ETS systems, but not a national approach to pricing carbon. For example, the US has the Regional Greenhouse Gas Initiative (RGGI) covering 11 US states in the northeast of the country, the California cap and trade system, and the Western Climate Initiative (WCI) covering two American states and two Canadian provinces. WCI has no regulatory power but issues recommendations for a regional cap-and-trade programme.

[25] Under the IRA, the USA partners with private investors to modernise and decarbonise the national energy matrix (regulatory nature). The rules foresee a long list of activities that qualify for tax credit when private parties invest in renewables, new technologies, and carbon capture and storage that are conditional on satisfying certain labour requirements. Some of the rules stimulate domestic content (bonus credits provided). Other bonuses are allowed for low income, energy community and other vulnerable communities. The overall tax credit can amount to 70 per cent.

[26] The US proposal for a Border Carbon Adjustment measure is foreseen under the Fair, Affordable, Innovative, and Resilient Transition and Competition Act of 2021.

reduction) of the CBAM applied at the border towards products deriving from the US and qualifying under the scope of the CBAM; and (ii) establish its own BCA in respect of the domestic carbon price.

What has happened in practice is that the IRA has driven legislative action by other countries who felt they might be left out of the race for development of new clean technologies if no national programme was instituted to further innovation. As a result, the EU, for example, is now considering the passing of new legislation (European Parliament 2023) to promote innovation and clean energy technologies at the same scale as the US purports to promote these actions.

The rather long example above goes to demonstrate that countries will act and political alignment can be achieved when countries feel that they might lose revenues or competitiveness in a field of high relevance for economic development. In the case of the MCTT, assuming there is minimum quorum to ratify the MCTT (even if only by the countries already applying carbon taxes at domestic level), this would imply a potential revenue loss by the countries that are left out.

The operation of the presumptive rule in combination with the rules of secondary and tertiary allocation puts each and every contracting state in the position of wearing two hats: those of tax enforcement and surveillance. This is because not exercising one's right to tax means that the next country down the value chain might do so on one's behalf. Therefore, the country who is next in line acts as the validating agent for activities occurring further upstream for every transaction. Furthermore, the penalty associated with the prohibition to grant unilateral tax incentives in Article 14(1) could well be the authorisation for the country next in line on the fossil fuel value chain to charge back the tax in the amount of the exemption or incentive, and keep those revenues for its own budgetary purposes. This would provide all countries involved in the closed system of the MCTT with a steady, certain and reliable flow of revenue stream for as long as they rely on carbon polluting resources, and the countries that are out of the MCTT with negative revenue allocations. In fact, countries not ratifying the MCTT would be left with a loss, to the extent that participating countries would be allowed to take over the tax base of non-participating countries and use the resources for their own budgetary purposes.

3.3 Carbon tax versus a carbon price

The MCTT concerns the establishment of a carbon tax, not a price. This is a very important point because it speaks to the practicability of the MCTT in the short term. While there is no current consensus on what a carbon price stands for (and

what types of instruments it covers),[27] there are certain instruments that are generally perceived to price carbon either because they can confer a positive price on carbon, or because they detract from the overall carbon price. There are four instruments capable of conferring an explicit or implicit price on carbon. These are carbon taxes, ETS, energy excise taxes or taxes based on energy use, and fossil fuel taxes. Carbon taxes and ETSs[28] are the only two instruments capable of conferring an explicit price on carbon, because the operation of the instrument is in itself capable of conferring a clear price indicator. Excises on energy and on fossil fuel products confer only an implicit price because these do not tend to be introduced having in mind the pricing of carbon as a main consideration. To start with, they are levied on the retail, ad valorem price, meaning they are not specific and therefore they depend on a mathematical computation to be able to draw the inbuilt carbon price.

In addition to the above, there are instruments that detract from the price. These are fossil fuel subsidies, any type of exemption or tax rate reduction that might be conferred nationally, state subventions, incentives, and other reductive measures.

Finally, one could bring to the table an array of instruments whose roles are questionable when it comes to the computation of the carbon price. These are instruments that can have the effect of either inflicting a positive price on carbon, equalising a domestic price, or impacting a national price positively or negatively. These would include regulatory measures, tariffs and other border measures, as well as the role that a credit or offset created from the operation of a voluntary market has to play in adding or detracting from the price.

Table 3.1 Equating the domestic carbon price

Equating the domestic carbon price	
(+) Instruments capable of generating a clear price indicator either explicitly or implicitly	Carbon taxes
	Emissions trading system
	Energy excise taxes/taxes based on energy use
	Fossil fuel taxes and other pollution taxes
	Fossil fuel subsidies

[27] There is ongoing work from three of the four main intergovernmental organisations, but no agreement has been reached in respect of a common definition. See in this respect: OECD 2021; Black *et al*. 2022: 4; Garsous 2023; and Agnolucci, forthcoming.

[28] ETSs will derive an explicit carbon price provided the original allowance is auctioned, rather than grandfathered. Please refer to section 3.3.1 for further information.

(-) Instruments that will have the effect of reducing the price	Exemptions and tax rate reduction
	State subvention and special regimes
(+/-) Questionable instrument assimilations (non-price based instruments)	Regulatory policies which result in an implicit marginal price on carbon
	Tariffs and other border measures
	Offsets/credits derived from voluntary carbon markets

Source: Author's own creation.

The table above is to be analysed mathematically. In green are the instruments capable of conferring a positive price on carbon. Meaning, they are capable of costing carbon directly, either as a result of the operation of the instrument itself, or of a derivation, by using the ad valorem price of the commercialised energy or fuel product as a starting point to derive the carbon price.[29] In red are the instruments that would have the effect of detracting from the carbon price. These are instruments that are also imposed on the ad valorem price of final products (fuels or energy items). Therefore, achieving price equivalence to the instruments imposing a positive price would likewise require a previously agreed mathematical formula to equate the cost of carbon.[30]

In orange are the instruments marked as questionable, in the sense that it is still unclear whether these could, in fact, come to be linked to the attribution of a carbon price. The difficulties are practical and political in nature. For example, recognising a regulatory measure such as an energy efficiency standard as equivalent to a carbon price would require (i) an agreement on the mathematical computation to derive the carbon economy resulting in the price; (ii) oversight and potential equalisation of the technologies employed to obtain the higher efficiency standard; and (iii) a transboundary recognition of the equalisation measures employed by different countries. The literature is still split on this topic. For example, the OECD has recently qualified these as non-price-based instruments where the main policy motivation is to reduce GHG emissions (OECD 2022).

[29] Section 4.2 will cover this latter point more extensively.

[30] The Platform on Collaboration on Tax (PCT), a collaboration between the United Nations, OECD, IMF and the World Bank Group, published in November 2023 a report (PCT 2023) on carbon pricing metrics, providing an overview of the different metrics employed by the intergovernmental partners, to measure explicit, implicit, positive and negative carbon prices. The paper does not conclude for the application of one or another metric because that would have to be the object of a political decision. It discusses instead how the different metrics can be used to complement each other. This paper could instruct the political debate in getting an agreement on the metric applied for the computation of a national carbon price in future Conference of the Parties (COP) debates.

While a carbon tax is just one tool in the large array of instruments that exist to price carbon,[31] the advantage of having an MCTT centred around the carbon tax and not a price is that there is no underlying definitional issue to overcome prior to acceptance of the MCTT. Countries can understand what a carbon tax stands for and how it works. Furthermore, it is widely recognised that carbon taxation is the most efficient and cost-effective instrument to reduce carbon emissions at the scale and speed that is necessary.[32]

Narrowing the base to cover only a carbon tax instrument adds practicability to the MCTT, to the extent it becomes readily implementable. At the same time, it is clear that, as the debate progresses internationally, and intergovernmental organisations (together with countries) come to (i) agree on a definition of a carbon price, and (ii) define a common approach to derive the equivalent carbon price from an implicit pricing instrument,[33] there will be scope to expand the scope of the MCTT to potentially cover other pricing instruments, or to form a climate club based on the notion of a carbon price, as per Article 10 of the MCTT.[34]

3.3.1 Carbon tax's correlation to other policy instruments

One comment that surfaced quite often was how to reconcile the MCTT with other carbon pricing policies that countries might already have in place, like an ETS. Some argued that perhaps a gross up should be conferred in the amount of the price practiced under the ETS, or a carve out for payments of emissions rights, based on the argument that not accounting for the price of ETS may weaken the political bargain, especially in Europe where the ETS is strong.

While the point is well taken, it must be noted that the ratification of the MCTT does not pre-empt countries from adopting other explicit or implicit carbon pricing instruments as part of a wider climate policy objective. In fact, many European countries participating in the EU ETS system run concomitant carbon tax regimes;[35] some of them use the carbon tax to establish a higher pricing

[31] For an overview of the discussion concerning the conceptual approach to carbon pricing, see Falcão, forthcoming.

[32] Economists' statement on carbon dividends organised by the Climate Leadership Council, https://www.econstatement.org/

[33] The IMF and OECD have discussed methodologies for assessing the carbon price equivalence of alternative mitigation policies in a joint OECD/IMF report (OECD/IMF 2022).

[34] A climate club that unfolds from the MCTT could, for example, follow the IMF proposal for a common price floor. See in this respect: Parry *et al*. 2021.

See also: Stern and Lankes 2022; and G7 2022.

[35] For example, Norway, Finland, Sweden.

benchmark and reduce price volatility in the market, or a carbon price floor.[36] Some of them even have domestic ETS systems that complement the region-wide EU ETS approach.[37] What these examples have in common is that the different pricing policies complement each other, rather than competing, or precluding one another.

A carbon tax policy that works as a floor might set the carbon price benchmark for the whole economy, particularly if it is set at the upstream level of the value chain, which would be the level of extraction (for resource-rich countries) or import (for resource-poor countries), while the ETS would provide for a top-up price that is employed towards certain key carbon intensive sectors at the downstream level. A carbon tax that coexists with an ETS might only reach sectors that are not covered by the EU ETS. Outside the EU region, there are other examples of countries that use ETS and carbon tax systems interchangeably, to cover national and subnational approaches[38] or across different provinces of the state where the provinces are assigned greater autonomy.[39] The underlying message is that the different instruments can coexist within the same normative setting, and therefore there is no need to add complexity to the structure of the MCTT by granting specific exemptions or credits.

In practice, what might happen is that countries use the MCTT structure to confer an economy-wide pricing policy, and then use complementary policies like the ETS to supplement where the economic stimulus for product substitution has to be greatest with respect to a particular carbon intensive industry. ETSs could also be used as a supplementary policy to understand emissions release concentration patterns at the downstream level and in that sense, facilitate adhesion to a voluntary carbon market or an Article 6 of the Paris Agreement arrangement in the long term.[40] The pricing factor might therefore ultimately not even be the central objective of an ETS.

Agreeing on a common carbon tax base might lead to a revision of other pricing policies, but it would not in any way counterfeit those policies. The best practices dictate that to achieve the Paris Agreement targets, countries have to build a consistent policy mix that involves more than just taxing carbon (World Bank 2022).

---

[36] For example, the Netherlands and the United Kingdom.

[37] For example, Germany has adopted a National Emissions Trading System for heating and transport fuels in 2021. See in this respect German Emissions Trading Authority (DEHSt) n.d..

[38] For example, Mexico.

[39] For example, Canada.

[40] For example, Chile and, to some extent, also South Africa through the regulations on emissions offsets.

3.4 Carbon dioxide emissions or carbon dioxide equivalent emissions

In the same vein as the point raised in section 3.3 is the argument that the MCTT could account for carbon dioxide equivalent emissions, and not just carbon dioxide emissions. Carbon dioxide equivalent emissions is a measurement that is used to equate emissions deriving from the six greenhouse gases covered by the Paris Agreement. They are referred to as equivalent emissions, because carbon is used as a proxy to measure them according to their global warming potential.[41]

Article 6 of the MCTT defines carbon to be the object of taxation. Carbon is being used here as a proxy for the corresponding carbon dioxide emissions that will be released following its combustion. Since the default rule is for taxation at the upstream level, the best proxy would be carbon ore in its mineral form when present in fuel prior to combustion. The idea is to have an extension of the tax base over time, but to start with a quite narrow tax base. This expansion could therefore cover an increase in scope that assumes carbon dioxide equivalent emissions. However, the proposal of the MCTT at this initial stage is to start narrow, both for political feasibility and to give countries an opportunity to adapt to the framework of the treaty. For the same reason, biomass and biofuels are also excluded from the base and from the scope of the MCTT.[42]

[41] For a complete list of GHG GWPs, see IPCC 2007b: 212–213.

[42] The computation of carbon equivalent emissions deriving from biofuels and land use emissions is also a topic that is still controversial in the literature, therefore the topic stays out of the MCTT for practical reasons.

4. Some technical issues

4.1 Alignment with other international instruments

The text of the MCTT is aligned with the concepts defined in earlier international environmental agreements, but most importantly also with the goals set by the Paris Agreement. Alignment with other environmental agreements is secured via the reproduction of the goals in the preamble and the definitions adopted in Article 1, the definitions article.[43]

In terms of emissions reduction potential and the setting of the climate goals, the text then aligns with the objectives set out in the Paris Agreement,[44] which is the most recent climate agreement to date. Climate goal alignment is important, because it allows the MCTT to live by the same instruments and processes that have been set up for the Paris Agreement process, economising resources and aligning international practices.

For example, under the terms of the MCTT, the tax rate schedule is mandated to be revised every five years, together with the Paris Agreement's stocktake process,[45] so that the mitigation action achieved via the MCTT can be commensurate with the establishment of the nationally determined contribution (NDC) targets.[46]

In that sense the MCTT works to complement and implement the framework created by the Paris Agreement. The Paris Agreement establishes a bottom-up approach, meaning it establishes the targets, but not how to achieve them. The MCTT, on the other hand, provides a top-down approach by establishing the carbon tax as one of the instruments capable of fulfilling the Paris Agreement

---

[43] The definitions article borrows from the terminology employed under the UNFCCC, Kyoto Protocol, the UN Rio Declaration and more recently, by the Agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, 19 June 2023 (United Nations 2023).

[44] See Article 2(1) and (2) of the MCTT, as aligned with Article 2.1(a) of the Paris Agreement.

[45] The global stocktake (GST) is a process whereby 'every five years, countries assess collective progress toward the agreement's long-term goals, considering mitigation, adaptation and finance, as well as equity and the best available science. Each country, informed by this periodic stocktake, is then to submit an updated NDC reflecting a "progression" beyond its current NDC and "its highest possible ambition." This combination of GST and NDC updating is known as the "ambition cycle." Properly executed, the GST process can provide the critical foundation for a regular series of high-level political moments that progressively ratchet up climate ambition.' Center for Climate and Energy Solutions and Energy Defense Fund 2022: 6.

See also UNFCCC n.d., Technical Dialogue of the First Global Stocktake.

[46] Article 8(12) of the MCTT.

goals through the establishment of a level playing field characterised as a minimum carbon price (Pirlot 2022: 45).

The top-down approach basically implies an agreement on what to do about reducing carbon dioxide emissions in the near future. As well pointed out by Schelling,[47] there is vast evidence to support that a treaty establishing the practical steps countries need to commit to to achieve the intended results has far greater chances of success than the establishment of vague results on the long-term horizon, when political leaders and government priorities will have been subjected to change. Committing on a specific action pattern over a long-term period binds current and future governments to a particular course of action which is much more likely to generate the expected positive results in the long run.

The UNFCCC, the Kyoto Protocol, the Paris Agreement (through the NDC implementation (UNFCCC 2021) and the IPCC, as a result of it, apply a territorial approach to the accounting of greenhouse gas emissions.[48] This creates a presumption that is in favour of states adopting only instruments that are capable of computing emissions released within one's territory, within the scope of one's own domestic climate change laws (Scott 2015: 92, 93 and 100–102). The result is what we see now in international negotiation processes where one witnesses an incredible difficulty in agreeing on standards that go beyond one's national territory.

By imposing a carbon tax, the MCTT honours the principle of territoriality that is subscribed to in all the major international environmental agreements. At the same time, it creates ordering rules on how cross-border transactions (and the emissions resulting from them) are to be priced so that the ultimate result is positive in the sense that the joint action by all countries leads to a corresponding reduction in global carbon emissions.

The only two exceptions to the principle of territoriality in the Paris Agreement are emissions released from shipping and air transport, which are dealt with separately under specific articles (see section 4.3).

[47] Schelling cites the establishment of NATO and the 1946 negotiation of the Bretton Woods Institutions which culminated in the creation of the IMF as two practical examples where countries agreed on how to act in order to achieve an intended result (Schelling 2009).

[48] IPCC (2006) chapter 8: 4. According to this document, 'National inventories should include greenhouse gas emissions and removals taking place within national territory and offshore areas over which the country has jurisdiction.'

4.2 International environmental tax principles

The MCTT furthers the application of four international environmental principles: the polluter pays principle,[49] the principle of prevention,[50] the precautionary principle,[51] and the principle of common but differentiated responsibilities.[52] These are principles that have long been agreed upon in environmental negotiations, and have been repeatedly applied in environmental treaties, including in the most recent UN agreement on conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (United Nations 2023).

I have argued that these four principles are enough to form the basis of the international tax environmental framework to both tax and price carbon emissions on a cross-border basis (Falcão 2019a, chapter 2). More importantly, outside the realm of pure academics, it is important to note that some of these principles are in fact being used to construe taxing and pricing rights by some countries, for emissions released in other countries.

For example, in 2021 the Hague court of first instance (Dutch District Court 2021) used the principle of precaution, that is, the risk of unknown or unquantifiable harm to future generations, to bind Shell's global operations to the environmental

[49] The polluter-pays principle relies on the economic understanding that the use of the environment in a positive or a negative way must be quantified as an externality. Created by Pigou in the 1920s, the concept of externality taxation has been absorbed as a guiding principle for environmental policy and as a driving principle in many international environmental conventions. Most importantly, it has been incorporated as principle 16 of the Rio Declaration (UN 1992b: 22 and 39).

[50] The principle of prevention translates into a state's responsibility to ensure that the activities within the jurisdiction or control of one state do not cause damage to the environment of other states. It reverts back to a historical case (Trail Smelter), decided by the International (Arbitral) Court in 1941. Since then it has been reproduced in so many conventions that it is sometimes referred to in the literature as a principle of international law. It is embodied in the following environmental agreements, among others: as (i) Principle 21 of the Stockholm Declaration, 1972; (ii) Principle 2 of the Rio Declaration; (iii) Art. 3(3) of the UNFCCC; (iv) Art. 2 of United Nations, Geneva Convention on Long-Range Transboundary Air Pollution (UN 1979); and (v) Art. 4 of the 1985 ASEAN Convention on Conservation of Nature.

[51] The precautionary principle translates into the risk of future long-term harm to the environment that cannot be fully assessed at the time of the decision-making process. The precautionary principle was first recognised in the World Charter of Nature, adopted by the UN General Assembly in 1982, but it was only codified at the global level with the introduction of Principle 15 in the UN Rio Declaration, indicating that 'the lack of scientific certainty is no reason to postpone action to avoid potentially serious or irreversible harm to the environment'. It was later also reproduced in the UNFCCC (Article 3(3)).

[52] The principle includes two fundamental elements. The first concerns the common responsibility of the states and the duty to cooperate in the spirit of global partnership for the protection of the environment. The second concerns the need to take into account each country's specific circumstances, their role in contributing to a particular problem and their overall ability to prevent, control and reduce the unwanted outcome. This principle has been formally recognised in principle 7 of the UN Rio Declaration (Centre for International Sustainable Development Law 2002).

standards set in the Netherlands.[53] The court found that there was a risk that the company's activities overseas might have direct impact on the rising sea levels in the Wadden Sea, a small island region in the Netherlands. The decision required Shell to reduce scope 1, 2 and 3 emissions[54] from its global operations by 45 per cent by 2030, compared to 2019 levels, by reforming the group's corporate policy (Falcão 2021a: 199).

By including these principles in the MCTT, the expectation is to have a formal recognition that these are principles that are indeed suitable and important for guiding the interface between international tax and climate agreements, especially when it comes to the pricing of carbon.[55]

4.3 Border carbon adjustment

The MCTT works in a closed system, meaning a system where countries aim to achieve a common goal, using a shared mitigation strategy (the carbon tax), owing much to the inspiration of the system employed under the Paris Agreement, where the closed system is defined by the common temperature target.

Operating under a closed system means that the increase in emissions in some jurisdictions (possibly subjected to a lower carbon tax rate under the tax rate schedules in Article 8(5), (10) and (11)), remains within that system, even if there might be some level of carbon leakage within it. The lower tax rates conceded to low- and middle-income countries on account of the application of the principle of common but differentiated responsibilities in essence translates into a recognition that these countries are given the right to benefit from a higher share of the remaining global carbon budget.[56]

The advantage of operating under a closed system is that it allows countries to act in tandem, imposing an adjustment measure towards third countries and non-compliant countries from the perspective of the MCTT and the Paris Agreement. There is an argument to say that from a climate change perspective, the BCA measure would be admissible to keep the climate target intended by the Paris Agreement. However, the application of a BCA measure would also be

[53] Shell (RDS), the head of the group, is resident in the Netherlands so the residence criteria was used as the element of connection.

[54] The decision is quite far-fetching. It requires Shell to reduce scope 3 emissions which would typically be the emissions released by retailers selling Shell's products, meaning those emissions would not necessarily be within the company's control.

[55] The first step was already provided when the UN Tax Committee of Experts in International Tax Cooperation included the principles within the realm of the UN Handbook on Carbon Taxation for Developing Countries (UN 2021).

[56] For an overview of how a closed system works, see Pirlot 2022: 50–51.

admissible from a trade and pricing perspective, as well established in the WTO jurisprudence on the application of Article XX(g) of the GATT.[57]

The MCTT creates two rules that relate to the application of a BCA measure for tax purposes. The first is that which relates to third parties (non-treaty members) which, as aforementioned, is admissible under the GATT, Article XX (g), as an instrument to equalise domestic and foreign prices and avoid carbon leakage.[58] The second rule[59] applies to allow contracting states to employ a BCA towards other contracting states if the difference in effective tax rate between the two is 10 per cent or more.[60] This is a rule that aims to reduce the impact of the waterbed effect that is implicit to any closed system where there is no absolute determination of a single tax rate.[61]

A waterbed effect occurs when there is internal leakage within a closed system. Or, in other words, there is a reduction of emissions in one place (let's say, in the countries applying the highest rates) and an increase in another (the countries employing the lowest rates). Because it is a closed system where all countries are bound by a common target, the leakage is limited by the overall temperature target. So even if there might be internal leakage (within the structure of the MCTT), the leakage cannot be measured outside the closed system, because any leakage in one country needs to be offset by the leakage in another country.

For that reason, the MCTT carries an internal BCA rule. The internal BCA rule works to limit the internal leakage rate to 10 per cent of the rate that is determined under the MCTT tax rate schedules. This means that the leakage rate will be equal to 10 per cent irrespective of the tax rate floors administered under the MCTT (assuming all high-income countries apply an internal BCA towards other contracting states, which might not necessarily be the case). This allows

[57] For a full review on the admissibility criteria, see Falcão 2021c: 41; Falcão and Englisch 2021.As signalled in the latter text, one of the tests under the chapeau requires the country or countries imposing the BCA to show that they have put considerable effort into concluding bilateral and multilateral agreements to achieve the envisaged policy goals and if the measure is flexible. See also WTO 1998, para. 166; WTO 2001b para. 134. The Appellate Body and panels have on different occasions argued that a measure will not be deemed a disguised restriction to international trade if it (i) has been publicly announced as a trade measure; (ii) is not an arbitrary or unjustifiable act of discrimination with respect to international trade – a disguised restriction must thus also be read as a form of disguised discrimination with respect to international trade; and (iii) its design, architecture, and structure do not reveal any protectionist and trade-restrictive objectives disguised behind the stated legislative intent. Provided these tests are observed, the BCA measure will be upheld. See: WTO 1996b: 27 and the references cited in WTO 2001a.

[58] Article 9(4) of the MCTT.

[59] Article 9(2) of the MCTT.

[60] The tax rate used as reference is that which is negotiated and subscribed under the MCTT. The basis used is that which was negotiated under the MCTT. To allow a BCA under the rule in Article 9(2) which relates to tax rates that might be employed at country level only would be unfair, because it could have the effect of precluding the application of the principle of common but differentiated responsibilities.

[61] Eichner and Pethig 2019. See also Kjær Kruse-Andersen, Beck and Stewart 2021.

countries to work towards a high enough overall (formal)[62] carbon tax rate while at the same time preserving the principle of common but differentiated responsibilities and respective capabilities.

The MCTT contemplates the application of a border carbon adjustment measure towards third states who are not members of the treaty, but disallows a BCA on export transactions. The reason is clear: doing so would forfeit the purpose of the MCTT by eliminating the tax that was imposed in the first place.

Article 9(1) provides that a border carbon adjustment is any fiscal measure which puts into effect, in whole or in part, the destination principle. The destination principle enables imported products to be charged with some or all of the tax charged in the importing country in respect of similar domestic products, and exported products to be relieved of some or all of the tax charged in the exporting country in respect of similar domestic products sold to consumers on the home market (WTO/GATT 1970). This definition, as cited, is that which is put forward by the WTO and therefore measures the admissibility of the BCA in respect of its equivalence to the tax that is employed in the domestic market (the importing product), and not in respect of the embodied carbon in products manufactured in third countries (the exporting country).

Using a product's embodied carbon emissions as a benchmark to articulate the definition of a BCA is an approach that is commonly employed by the economic literature.[63] However, doing so fails to capture the legal requirements for admissibility of the BCA measure, which relies on the concept of similarity of treatment between countries under the GATT, also known as the 'even handedness requirement'.

The even handedness requirement implies that a measure imposing restrictions on imported products should also be applied on domestically produced products so that (1) there is no distortion of competition between like products, and (2) foreign and domestic products compete on equal terms when accessing a foreign or domestic market (WTO 1996b: 20, 21). This requirement does not in itself limit the imposition of a border tax but conditions it to the imposition of a similar domestic tax (Falcão 2021c: 41). This means that the domestic regulation must equally impose a restriction on domestic production that is roughly equivalent to that imposed on imports (WTO 2014).

As further denoted in section 6 on the governance structure, (i) with the BCA being jointly administered by the UN system and the WTO dispute settlement

[62] The word 'formal' is used here because the MCTT rates are carbon tax floors, meaning countries can employ higher rates at domestic level if they wish to.

[63] For example, the IMF defines BCAs as 'a charge on embodied carbon in products imported into a jurisdiction with carbon pricing, potentially matched by rebates for embodied carbon in exports'. Parry *et al*. 2021.

structure, and (ii) taking into account that the MCTT provides for the normative structure for operation of the treaty, it makes sense for the definition of the rule to follow both the normative structure of the WTO and its jurisprudence.[64] There is well established jurisprudence at the level of the WTO to support that a BCA measure in respect of a carbon tax is admissible under the GATT (Falcão and Englisch 2021). Furthermore, the definition that uses inbuilt carbon emissions in the country of export as a benchmark would add unnecessary complexity to the operation of the MCTT, particularly upon application of the tertiary allocation rules, as it could require potentially global consensus on the technology standards for production of certain fossil fuel products.

Finally, the original version of the MCTT contemplated the creation of a climate club as an integral part of the BCA article. Following advice from experts, it was contended that the climate club option would be better suited for an independent article, and potentially also an independent instrument.

The MCTT therefore allows the creation of a climate club type instrument as part of the MCTT framework but detached from it. A climate club that derives from the MCTT would have to be within the limits set by the MCTT, but it might establish an even higher degree of harmonisation between its members. For example, it could establish more ambitious pricing targets, by expanding the scope of the MCTT to cover a wider definition of carbon price, or to cover carbon dioxide equivalent emissions.[65]

4.4 Sectoral issues

The section of the MCTT covering sectoral issues, namely, emissions from aviation and shipping, is the only section that supports optional provisions. Meaning, countries signing in to the MCTT can opt out of the shipping and the aviation provisions. The reason for this is that these are extremely controversial areas that rely on extensive political debate concerning legitimacy for the taxation of emissions that are ultimately released in international airspace and international waters.

As will be further explained in the designated sections, there is a (disputable) argument to sustain that the Chicago Convention would prohibit the imposition of a carbon tax on kerosene fuel burnt on an international flight. Furthermore, shipping activities tend to be regulated by the International Maritime Organization (IMO), and the political agreement there seems to be to work on improving

[64] Of further note is the objective to protect clean air that was added to Article 2 of the MCTT so that it is in line with the recent jurisprudence of the Appellate tribunal concerning the application of Article XX(g) of the GATT, (public policy exception). The protection of clean air was determined to be a justifiable measure to impose a BCA measure in respect to a tax (WTO 1996b: 20, 21).

[65] See sections 3.3 and 3.4.

energy efficiency standards in maritime transport. These standards will by no means be enough to meet the goals of the Paris Agreement, but so far, that has been the political compromise achieved.

The maritime article also covers transport of persons (including cruises) and fishing activities. The maritime industry has been indirectly covered within the scope of the recently concluded Treaty on the High Seas (United Nations 2023), whose objective is to 'ensure the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction'. It does so by observing, among others, the polluter pays principle (ibid., Article 7(a)), and requiring parties to cooperate '(…) including through strengthening and enhancing cooperation with and promoting cooperation among relevant legal instruments and frameworks the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction' (ibid., Article 8(1)). The Treaty on the High Seas therefore would support the negotiation of multilateral treaties such as the MCTT whose object is to reduce the impact of carbon dioxide emissions on the high seas.

One recently lost opportunity for the regulation of maritime emissions deriving from vessels engaged in fishing activities is the WTO Agreement on Fisheries Subsidies of July 2022 (WTO 2022). Article 5, contemplating other subsidies, originally contemplated subsidies contributing to overcapacity and overfishing (including, among others, subsidies for the construction, acquisition, or upgrading of vessels, and subsidies for the purchase of fuel), but members ultimately were not able to arrive at a consensus and therefore Article 5 was modified to cover only (i) a prohibition of subsidies to fishing and fishing-related activities occurring on the unregulated high seas (Article 5.1), and (ii) requiring members to show particular caution when granting subsidies in two types of situations: (a) when subsidised vessels do not fly the subsidising member's flag (Article 5.2), and (b) when the status of fish stocks is unknown (Article 5.3) (Irschlinger and Tipping 2021: 14). It is a true lost opportunity, since it is the product of five years of negotiations,[66] and would have put countries closer to the target set in COP26 under the Glasgow Pact,[67] to phase down harmful fossil fuel subsidies. However, it is clear that a much larger effort will be needed to address politically sensitive sectors, such as fishing.

The argument for including these sectors as optional approaches is, as aforementioned, that the objective of the MCTT is for it to be readily implemented. Meaning, an agreement that works now, under the current political scenario.

[66] The target to engage constructively in the fisheries subsidies negotiations was set in the 11th Ministerial Conference, held in Buenos Aires between 13 and 17 December 2017.

[67] UNFCCC 2022: 5, para. 36. It is to be noted that this is the first multilateral agreement signed by the WTO on the topic of environmental protection that furthers an SDG, namely SDG Target 14.6.2. The instrument is currently in the ratification phase and will enter into force once it is signed by 2/3 of the membership.

There is a risk that including these topics and having them as mandatory topics for adhesion by every signatory state could undermine the agreement on an MCTT as a whole. It could be that some countries would choose not to sign up to the MCTT because of the aviation and shipping articles.

On the other hand, this would be an incomplete document were it not to include these sectors. For one, there has been substantive progress in ascertaining taxing rights over aviation and shipping activities (including fishing) by using other proxies as taxing elements. Also, it is expected that as climate discussions become less of a novelty and more part of everyday business, the taxation of these sectors will become mainstream, as it seems to already be in certain regions across the globe.[68]

The second reason why these two sectors are addressed separately is because of the accounting principle to which they are assigned under computation and reporting in IPCC reports. As aforementioned, carbon emissions deriving from the combustion of fossil fuels follow the principle of territoriality. According to the IPCC, national inventories should include anthropogenic emissions and removals, meaning greenhouse gas emissions and removals that are a result of human activity, that are taking place within national territory and offshore areas over which the country has jurisdiction (IPCC 2006b: p.8.4). Emissions from fuel for use on ships or aircraft engaged in international transport should not be included in national totals: they should be reported separately.

According to the rules, international maritime transport should be reported according to an international/domestic split on the basis of port of departure and port of arrival, and not by the flag or nationality of the ship (ibid. category 1A3d and 1A3d1, waterborne navigation: p. 8.14). Likewise, aviation emissions' international/domestic split should be determined on the basis of departure and landing locations for each flight stage and not by the nationality of the airline (ibid., category 1A3a, civil aviation: p.8.12).

Finally, fishing includes emissions from fuel used in inland, coastal, and deep-sea fishing. Emissions resulting from fuel used in coastal and deep-sea fishing should be allocated to the country delivering the fuel, or in other words, the country of origin, within the language of the MCTT. Fishing should cover vessels of all flags that have refuelled in the country (including international fishing) (ibid., category 1A4ciii, fishing (mobile combustion): p.8.15).

As a result, different rules had to be created to follow the ordinance set by the IPCC, which is ultimately also the regulatory framework followed by the Paris Agreement to compute for emissions arising within the jurisdiction of any one state. It would only make sense that the tax rules followed the pre-established

[68] See in this regard, for example, the EU adopted proposal to extend the EU ETS to shipping as of 1 January 2024.

approach instated for computation of emissions. Therefore, to avoid any confusion or create parallel systems, the rule of application in the MCTT is taxation in the country of origin for aviation emissions (secondary right of taxation attributed to the country of destination), taxation in the country of destination for cargo maritime transport, and taxation in the country or origin (or where the fuelling takes place) in the case of cruise activities (transport of persons) and fishing activities.

Finally, it is to be noted, on account of the many forums under which these topics are discussed, that the MCTT would take the place of the most specific rule when it comes to the taxation of carbon emissions arising out of transportation activities occurring on a cross-border basis. It would also be considered to be the later-in-time document, for countries supporting that approach; therefore signing up to these articles would pre-empt other agreements before it that might oppose the rule instated in these articles. These two rules would have the object of removing any further controversy around these articles after the MCTT is concluded, signed and ratified.

4.4.1 The aviation sector

The traditional argument utilised to justify non-taxation of carbon emissions released by commercial air transport is the existence of the Chicago Convention of 1944 (ICAO 2006) which would, in fact, prohibit such taxation (Falcão 2021b). The prohibition is contained under Chapter IV, Article 24(a) of the Chicago Convention under the heading ‘Measures to facilitate air navigation’. It reads:

> Aircraft on a flight to, from, or across the territory of another Contracting State shall be admitted temporarily free of duty, subject to the customs regulations of the State. Fuel, lubricating oils, spare parts, regular equipment and aircraft stores on board an aircraft of a contracting State, on arrival in the territory of another contracting State and retained on board on leaving the territory of that State shall be exempt from customs duty, inspection fees or similar national or local duties and charges.

The language of Article 24(3) of the Chicago Convention, as cited above, cannot be disregarded. According to the provision, fuels carried on board an aircraft of a contracting state, on arrival in the territory of another contracting state and retained on board when leaving the territory of that state, shall be exempt of duties and charges. The pre-requirement for the exemption to apply is therefore that the fuel both arrives in the aircraft and is retained on board when leaving the territory of the state in question. The fuel that is in use by the aircraft may arrive in the aircraft but is combusted as it leaves that territory, polluting that state as the transport occurs. Therefore, it fails to meet what is considered to be an essential criterion to meet the exemption requirement, which is for the fuel to leave the state onboard the aircraft. This interpretative feature in the design of the provision

could provide grounds to exclude the exemption with respect to carbon emissions from the scope of said article.[69]

Besides the Chicago Agreement, note should be taken of existing Air Services Agreements (ASA) which are bilateral instruments that are similar to international treaties. These instruments can provide for the exemption from customs duties, excise taxes, and other duties and charges on aircraft, fuel, lubricating oils, technical supplies, and spare parts used by the airline of a state in the provision of international air transport services (United Nations 2021, supra n. 24, Ch.3, p.35–36, para. 106).

The granting of exemptions for the other party's designated airline(s) from customs duties or other charges on specified equipment and supplies when carried on board under an ASA can be on the basis of reciprocity, on the basis of the 'most favoured nation treatment' principle, or merely stated as the granting of an exemption. The obligations assumed by the parties under this type of provision are usually additional to those in Article 24 of the Chicago Convention. Some agreements refer to Article 24 rather than specifying any exemption. Therefore, in order to know whether there is a current restriction in levying a carbon tax on aviation fuel, the joint application of the Chicago Convention and any pertaining Air Services Agreement would need to be assessed (ICAO n.d.).

It is also important to note that this provision has always been assessed from a customs charge obligation perspective. Only recently has the Chicago Convention become the object of investigation under the perspective of carbon taxation. In that sense, the Chicago Convention doesn't stop states from taxing fuels across another territory; in the absence of a specific ASA agreement, it bans the imposition of taxes on fuels already on board an aircraft when that aircraft lands in a particular country.

In light of the controversy which has arisen around the Chicago Convention, one could start with at least one absolute truth about the application of this convention for the purposes of taxing emissions from aviation: countries are allowed to impose a carbon tax in domestic or intra-regional flights (potentially within a customs area) not subject to customs control.

This finding is significant for countries with a wide territory, as it could lead to a substantial taxing and revenue generation ability. It is of particular relevance to countries with continental proportions such as the United States, China, Australia, Brazil, India, Russia, Canada, and Mexico but could also imply significant revenues for countries with lesser proportions.

[69] There is extensive literature on the taxation of carbon emissions from aviation fuels: Faber, O'Leary and Mendes de Leon 2018; Keen, Parry and Strand 2013; Faber and van Wijngaarden 2019; Keen and Strand 2006; Forsyth 2019; European Commission 2019; Pache 2019a, 2019b.

Furthermore, an EU wide approach (which could be considered under the existing Green Deal) applying to the taxation of aviation emissions as *lex specialis* could allow European states to tax aviation emissions derived from intra-European flights and could overcome the limitations imposed by the Chicago Convention.[70] An agreement has, in fact, already been reached between the EU and the International Civil Aviation Organization (ICAO) to include aviation emissions within the scope of the EU Emissions Trading Scheme.[71]

Particularly on the European Union point, it is relevant to bring up the provision contained in Article 38 of the Chicago Convention on 'departures from international standards and procedures'. It allows states deeming it necessary to adopt regulations differing in any particular respect from those established by an international standard to provide immediate notification to the ICAO so that the latter may notify all other states. In a Memorandum of Cooperation between the EU and ICAO of 9 September 2011, a framework for enhanced relations and cooperation was agreed between the EU and ICAO in selected areas which include*, inter alia*, environmental protection (see Article 3(1)).[72] Most aspects of the Chicago Convention are under Union competence. The ICAO is pursuing policies in the fields of safety, security, environment, and air traffic management.[73] According to the EU, ICAO standards and requirements form the basis for EU legislation as international standards and are incorporated into EU law.[74]

---

[70] The International Civil Aviation Organization (ICAO) is a UN specialised agency acting as the global forum for civil aviation. The legal basis for the ICAO is the Chicago Convention on International Civil Aviation of 1944 (the Chicago Convention). The European Union works closely with the ICAO. As most aspects of the Chicago Convention come under Union competence, the ICAO is pursuing policies in the fields of safety, security, environment, and air traffic management. While it is endowed under the Chicago Convention and the UNFCCC with certain powers of oversight regarding aviation pollution, it does not have exclusive stewardship: states remain free to work within or outside the ICAO to develop a consensual treaty-based approach to carbon emissions reduction, like a carbon tax. All of these elements indicate that the adoption by the EU of a directive on this topic would not entail a conflict of norms with the Chicago Convention provisions and principles (like the 'fifth freedom') or the legal instruments issued by the ICAO.

[71] Aviation is included in the EU Emissions Trading System (ETS) by Directive 2008/101/EC in accordance with ICAO's resolution A35-5 on incorporating international aviation into existing trading schemes. See, in this respect: European Commission, *Air and Environment*, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0101 and Centre for International Sustainable Development Law 2012.

[72] The specific annex concerning the standards of cooperation in environmental protection has not yet been established. See EU and ICAO 2011.

[73] According to the information deposited on the European Commission website, the annex on environmental standards has not yet been concluded. See European Commission, n.d., https://transport.ec.europa.eu/transport-modes/air/international-aviation/european-union-icao/icao-cooperation-areas_en

[74] See, in this respect: European Commission 2012.

Focusing back on the international dimension of the Chicago Convention, it is noteworthy that Article 24(a) is a provision introduced into the Chicago Convention with the intention of facilitating air navigation through mutual tax-based exemptions. It is thus clearly not a provision that had environmental considerations in mind, pre-dates the climate change debate, and could thus be considered to be in conflict with other international obligations assumed by countries, for example, under the context of the UNFCCC, Kyoto Protocol, and Paris Agreement. Considering the impacts of climate change and global warming on global economies, it is very likely that many of the commitments assumed internationally and considered to be the current standard, i.e. 'traditional', practice, will have to be reviewed in light of new environmental considerations and bearing in mind sustainable consumption practices.

The overall understanding expressed in the MCTT is that it is legally possible to tax fuel used in aviation transport although the renegotiation of some treaties may be required for a country to be able to fully exercise its taxing ability.

Under the rule of Article 11 of the MCTT, the fuel would be taxed in the port of origin, prior to departure, based on inbuilt emissions associated with the burning of a particular volume of kerosene (aviation fuel) in a journey. The text is purposedly open, so that countries can chose to tax the fuel from the transport itself, or use a proxy for the taxation of fuel. For example, some countries nowadays choose to use the passenger count as a proxy for the taxation of the fuel (Neiva *et al*. 2021). In technical terms, this is levied as a ticket or passenger tax charged to the passenger based on the default value of the average pollution released in every mile travelled by the passenger in that journey. The tax is therefore levied on the passenger (or the parcel, if it is a cargo flight) instead of directly on the fuel. This is also a way to avoid the legal controversy arising out of the application of the Chicago Convention.

In the particular case of the MCTT, the controversy is neutralised, as the MCTT specifically provides that Article 11 prevails over any other arrangement agreed under an ASA if (i) both parties to the ASA are contracting states under this treaty; and (ii) both parties have signed up to Article 11 of the MCTT. It therefore applies the later-in-time rule, and with the MCTT being more recent and more specific with respect to the topic of taxation of carbon emissions, it would prevail over other agreements signed bilaterally by members of the MCTT.

4.4.2 The maritime sector

According to the International Maritime Organization, maritime transport emits approximately one billion tonnes of CO_2 annually and was responsible for approximately 2.5 per cent of all global greenhouse gas emissions in 2014 (IMO 2015). The prediction is that greenhouse gas emissions from maritime transport alone may increase between 50 and 250 per cent by 2050 depending on future economic and energy developments. The literature on the topic widely

acknowledges that shipping is one of the cleanest forms of transportation, at least on a mile-per-tonne basis. What makes this industry significant to discussions about the pollution spectrum is that there is so much activity taking place on the high seas, the general public fails to appreciate the pollution generated by those activities.

Unlike in the commercial air transport arena, there are no restrictions in international or tax law prohibiting or limiting a state's right to tax fuels used in the cross-border maritime transport of goods or in high seas fishing exploration (United Nations 2021: supra n. 24, Ch. 3, p.36, para. 112). In fact, the Kyoto Protocol (United Nations 1998, supra n. 17, at Article 2(2)) specifically called on Annex I parties – that is, developed countries that have specific emissions reduction targets under that agreement – to address emissions from shipping as part of their plans.

Absent such international agreement, two different sets of international regulations may come into play: (i) the regulations issued by the International Maritime Organization (IMO); and (ii) the UN Convention on the Law of the Seas (UNCLOS) which establishes a state's competence to regulate activities occurring in the high seas.

At the level of the IMO, emissions reduction targets for the international shipping industry began being discussed in 2010; however, a strategy was not established until 2018 after the signing of a more thorough international framework for environmental protection in 2015, i.e. the Paris Agreement. The Initial IMO Strategy on Reduction of [Greenhouse Gas] Emissions from Ships (IMO 2018) envisages a reduction in total greenhouse gas emissions from international shipping. Paragraph 3.1(3) states that total annual greenhouse gas emissions should peak as soon as possible and then, by 2050, be reduced at least 50 per cent relative to the 2008 level. However, the strategy does not contain any objective standards for specific countries or enterprises. The IMO strategy also calls for strengthening the energy efficiency design index for new ships and reducing CO_2 emissions from international shipping by at least 40 per cent by 2030 compared to the 2008 level – and 'pursuing efforts toward 70 per cent by 2050'. Thus, the 2018 IMO strategy concentrates on mitigation techniques and improving the efficiency of shipping transport rather than defining targets for greenhouse gas emissions reduction or enacting measures of direct control (such as a carbon tax) or a market-based initiative (such as an emissions trading scheme).[75] In the absence of a political agreement at the level of the IMO to tax emissions from maritime activities, countries are free to regulate the issue unilaterally, as has been the case, for example, under the approved extension of the EU ETS to the aviation sector. Provided countries observe the principles of

[75] For a more comprehensive discussion of the topic, see Falcão 2019b.

non-discrimination, good faith and non-abuse of rights, and design the regulations in a way that minimises the impact on the right of innocent passage and freedom of the high seas while respecting the sovereignty of other countries, there would be no opposition under international law (O'Leary 2022).

While the IMO would be the competent body to regulate emissions released on the high seas, UNCLOS attributes to a state the competence to regulate activities occurring in international waters and the high seas. Concerning addressing the 'pollution of the marine environment from or through the atmosphere', Article 212(1) of the UNCLOS imposes an obligation on registry states to adopt laws and regulations that are applicable to vessels flying their flag.

The dichotomy between the prerogatives assumed by these two sets of rules means that, in practice, countries lack sovereignty to tax emissions released in international waters. Therefore, a legal construct must be crafted to grant any one country the entitlement to tax. The argument that carbon emissions released on any specific shipping route – including routes crossing international waters or on the high seas – should be taxed by the country of destination and on a distance basis when the product undergoing the transport is the taxable element and not the ship or the ship owner, has been getting traction in most literature articles.[76]

That would provide a direct link between the product, its carbon footprint (or environmental impact), and the state of competence to tax to the extent that the state giving rise to the transport (or the state of destination of the good) would be both entitled to tax, burdened by the additional cost paid on the carbon emitted during the transport, and helped by the revenue derived from the transport.

The application of the destination principle would put into practice the effects principle, whereby a state has jurisdiction over acts that, while taking place outside its territory, nevertheless have an impact on it (Dominioni *et al*. 2018: 9). The effects principle could therefore provide a legitimate basis for a jurisdiction to tax because mitigating climate change is in the direct interest of the international community as a whole.

The formula employed in Article 12 of the MCTT is a simple one, taking into account only the distance travelled by the vessel and prorating the cost by the number of parcels aboard the vessel. One of the commentators raised the point that perhaps a more targeted approximation would also include the weight of the parcel. While there are studies to support this increased level of sophistication in the formula, the considerations are so far mostly academic, meaning there is no international agreement on how the weighting criteria would be factored in.[77]

[76] The full proposition can be read in: Falcão 2020: 1199. See also Dominioni *et al*. 2018.

[77] The following studies consider a number of factors to account for weight as a criteria to measure carbon dioxide emissions. (i) Dominioni *et al*. 2018 considers cargo weight, distance covered and fuel efficiency of the vessel(s) used to transport that cargo. (ii) Heine *et al*. 2015 considers taxation at a regional level.

Since the objective is to have a readily implementable MCTT, the option was made to use only distance as a proxy. This is a starting, *de minimis* standard. There is nothing to say that as the discussions surrounding this topic progress, this formula could not be perfected over time, as it should. There is therefore scope for more targeted taxation of these emissions even after the MCTT is in force.

4.4.2.1 Transport of persons

Following the framework laid out by the IPCC for the reporting of emissions from cross-border shipping activities, the country entitled to tax the emissions arising from the transport of persons is the country of origin. The primary reason for that is that most cruise activities, including those occurring between countries, are in fact round trips. Only a minority of trips are one-way trips starting in one country and ending in another.

The language of the article is purposively broad, to allow MCTT contracting states the discretion to choose to tax the fuel directly (via a carbon tax), or to use the passenger as a proxy to charge the tax per head count, as would be the situation in the case of aviation, for example. How the country chooses to tax will ultimately boil down to its tax policy structure and would not impact the operation of the MCTT.

Article 12, Paragraph 2 (c) contains a final rule for the cross-border transport of persons through the high seas, that is to handle the situation where refuelling takes place in the high seas, or a transshipment transaction. In that case, the country entitled to tax will be that where the refuelling takes place (the country from which the fuel originates from). In the case of transshipment, it remounts back to the country of origin, as a forward continuation of the journey.

4.4.2.2 Fishing

The last sector covered by Article 12 is the taxation of fishing activities. Following the IPCC framework for reporting of emissions, the rule established under the MCTT is taxation in the country of origin, including when the fishing vessel receives a new fuel load while on the high sea.[78]

Making the country of origin entitled to tax is also the best option because landing control in fishing expeditions is problematic (i.e. it is not an activity that is monitored by all countries). Fishing vessels are tracked; therefore, the country of origin is capable of obtaining data concerning the whole voyage of the vessel, including geographic location and whether or not it operated in the high seas.

[78] According to a report from Our Fish, in the EU alone, '(b)etween 2010 and 2020, the EU fishing fleet was exempted from paying up to €15.7 billion in fuel taxes' (Our Fish 2023: 15).

That is important for countries to be able to also capture via the tax fuel that is fed onto a fishing vessel via transshipment.

Therefore, were a country to agree to include fishing activities within the scope of the MCTT, the country of origin would require a double verification process. The first activity measured, reviewed, and verified would be the fuelling of the vessel prior to a trip, to make sure the tax is applied at the fuelling station. At a later moment, the fishing expedition would have to be reviewed and cross-checked against the total capacity of the vessel's tank. If it can be implied from the duration and route of the trip that the vessel would have had to have stopped in a foreign jurisdiction or have received additional fuel via transshipment in order to conclude the fishing expedition, then a top-up carbon tax would be applied taking into account the expected rate of consumption of the vessel in question. Reporting obligations could be created in order to reduce this investigative process. Likewise, it is clear that modern technologies could be employed in order to make both the auditing and the review process simple, and even automated.

As with the other articles, the solution put forward to address emissions from fishing activities was also the smallest common denominator and denotes greater scope for investigation and expansion. Commentators suggested also including the weight of the fish onboard the ship, to also account for the impact of overfishing on biodiversity.

That is because the extraction of fish from the sea[79] removes significant amounts of blue carbon from the ocean, releasing it from the atmosphere and thereby causing a direct impact on climate mitigation. Fish are natural vehicles for capturing, sequestering and storing carbon (Mariani *et al*. 2020). So in this sense, the conclusion of the above-mentioned Agreement on Fisheries Subsidies is a positive step forward, even if it does not address emissions from fishing vessels. It can control the fishing population, stimulate carbon capture and storage and in that sense be an important ally to the goals pursued via the MCTT.

Another dimension of the problem is the indiscriminate trawling of the seabed, where sea vessels literally dig up the seabed to capture crustaceans. That process has the impact of disturbing and resuspending carbon from the seafloor, and therefore results in one of the most carbon intensive activities in the fishing sector. That is because trawling vessels are some of the most carbon intensive vessels in a fishing fleet, due to the impact that trawling has in raising previously sequestered carbon from the seabed.[80] This particular dimension of fishing

[79] It is estimated that 80 million fish are taken from the sea worldwide, on an annual basis.

[80] Sala *et. al*. 2022 suggest a methodology to run energy efficiency audits on trawl boats in order to set the benchmark for emissions release resulting from this activity. The authors use the Mediterranean trawl fleets as a case study to run the methodology identified in the paper.

(trawling) is also not captured, at this initial stage, by the MCTT taxing instrument. The reason is two-fold: (i) there is not enough data to measure the impact of these activities on the release of carbon into the atmosphere, and (ii) there is no political agreement on how to address the issue.[81] Looking at the two most recent failed attempts at addressing emissions from fishing activities, the object was left simple so that at least some level of minimum compromise can be achieved at what is still an initial stage of the discussion.

Despite the level of controversy surrounding the taxation of fishing activities, progress is being made to address the problem unilaterally. In May 2023, Norway adopted the first known resource rent tax on aquaculture, known as the salmon tax (Ambagtsheer-Pakarinen 2023). The tax applies on the profits of salmon and trout farmers at the rate of 25 per cent and applies in addition to corporate income tax. This type of tax, if applied widely (covering more fish types and across jurisdictions), could help contribute to fishing data that could instruct a more complex formula to calculate CO_2 activities from fishing activities in the long run.

[81] According to R. Parker *et. al*. (2018), 'Fisheries are typically energy-intensive operations that produce the majority of their emissions directly from burning fossil fuels, and exhibit a marked variation both across and within fleets in the amount of fuel that is required.'

5. Revenue generation and use

A reduction in carbon-based emissions and the consumption of carbon-rich mineral resources will trigger the development of new, cleaner energy resources and processes, especially if the tax rate is high enough to stimulate a significant change of behaviour on the part of private and industrial commercial consumers.

Setting a high carbon price will provide private entities with enough incentive to develop new, carbon-free energy resources in an attempt to reduce the cost of production and the cost of doing business. Likewise, the generation of extra revenue resources derived from the carbon tax will present governments with surplus funds with which to finance research and development of new technologies to be employed in key sectors of the economy, and in particular, the manufacturing sector. The development of new, ground-breaking technology is typically funded by public administrations, and the administration of a carbon tax might be the only way to raise the funds required to advance in this field. A carbon fund would be created to dedicate a portion of the revenues accumulated via the carbon tax to research and development.

The MCTT does not recommend earmarking the revenues derived via the carbon tax for one such purpose. Earmarking revenues via an international instrument is extremely difficult due to the different legal and constitutional constraints imposed by domestic systems.

The MCTT proposes the creation of a Common Carbon Fund, aiming to provide financial and technical cooperation on a grant or concessional basis, including for the transfer of technology between the contracting states that are party to the MCTT.

The Common Carbon Fund is not to be mistaken for the loss and damage fund, (UNFCCC 2023b: 14) something which was often mentioned by the commentators. The Common Carbon Fund is a product of the MCTT which, as previously mentioned, operates in a closed system. As such, only the contracting states party to the MCTT are expected to benefit from the proceeds deposited to that account. This is yet another feature of the MCTT that aims to provide a redistributive nature to part of the funds accumulated via the tax.

The Common Carbon Fund will be funded through a percentage of the revenues accumulated via the application of the carbon tax. Revenues can be derived through the application of the default, secondary or tertiary allocation rules, therefore all countries are expected to contribute to the making of the fund, according to their capabilities, which will differ depending on the tax rate threshold applied. The percentage is purposively left open in the text of the MCTT, as it is expected to be defined through a political negotiation and agreement during the negotiation process.

The Common Carbon Fund is intended to provide equilibrium between high revenue earners and poor revenue earners. It is expected for there to be a shift in who qualifies as high and low revenue earners over time. That is because the expectation is that carbon consuming countries (i.e. high-income and some medium-income countries) would be the first to adhere to an MCTT type approach and therefore these countries would be the first to accumulate the revenues. The expectation is reflective of the countries' experience in implementing carbon taxation domestically. Therefore, it is expected, for example, that countries in the European Union with vast expertise in the application of carbon taxes and carbon pricing techniques, as well as Mexico, Canada, Chile, Argentina, Indonesia, the UK, Colombia, and South Africa, would be some of the first joiners, as they already have expertise in carbon tax application.

As the MCTT becomes streamlined, and other countries – especially medium and low-income countries who are resource rich – see the advantages of joining such a treaty, it is expected that the composition of high vs low-income earners would change, potentially shifting in favour of the global south, where much of the extractive fuel resources are located. On that note, it is important to mention that extractive resources are located all around the globe and no one country is self-sufficient in all types of oil qualities, therefore revenues are expected to be spread globally, and trade is expected to continue, even with the application of the MCTT.

The Common Carbon Fund, when employed in combination with Article 20 of the MCTT, on cooperation and technology development, has therefore the effect of levelling out revenue generation with technology development and allocation, so that all countries contribute to the green transition, but also benefit from the best available technology when adapting to a new status quo based on low carbon technologies. By equalising the contributions to a Common Carbon Fund, according to each country's differentiated capability, the resources can be utilised where the means for research and development exist, benefitting the entire MCTT community (Kennedy, Obeiter and Kaufman 2015: 2).

In the spirit of fairness, all penalties paid by contracting states due to non-compliance with one provision of the MCTT will be paid into the Common Carbon Fund, therefore furthering the objectives of all contracting states, by contributing to research in new technologies.

6. Governance structure

6.1 Organisational structure

This being an environmental agreement on the topic of climate mitigation, it is considered as an integral instrument within the family of international environmental agreements. In fact, it could be classified as an instrument that is subsidiary to the Paris Agreement for the implementation of Paris Agreement targets as defined in Article 2.

In spite of that, Article 21 provides also that the agreement is to function with the secretariat and shared function of the UNFCCC (as hosting institution) and the World Trade Organization. The trade dimension of this treaty is evident. It purports to price emissions from carbon intensive fuels and products, and it has an operational internal and external border carbon adjustment instrument within its realm. The objective of the treaty, as stated in Article 2 of the MCTT, already brings within its realm the WTO jurisprudence when it says that '(t)he objective of this Treaty is to achieve the stabilisation and reduction of carbon-based emissions and would protect clean air'. Clean air is in fact the object of protection in US-Gasoline, where a border gasoline tax is admitted as compatible with the GATT as an environmental public policy exception (WTO 1996c).

6.2. Dispute resolution

The benefit of engaging the WTO in the administration of the MCTT is most evident in the use of its dispute settlement body. Article 19 requires all disputes to be resolved within the framework of the dispute settlement body of the WTO. This would provide greater transparency to the dispute settlement process, and provide tax disputes arising from the MCTT with a true international tribunal to resolve those issues through the effective analysis of evidence based information provided by the parties, and a decision that follows the international rule of law. It is thought that, this being the first agreement for the imposition of a tax, which in itself is a topic countries prefer handling under the domestic rule of law because of sovereignty issues, the choice for a WTO jurisprudential based approach would be preferable to the dispute settlement mechanisms available in the international tax domain (mutual agreement procedure and tax arbitration)[82] that

[82] The application of tax arbitration towards disputed aspects of the two-pillar solution at the level of the OECD is one of the reasons why there is difficulty in getting to a final solution where all countries can agree (Falcão 2023).

are not transparent and therefore carry within them a great level of suspicion from developing countries.[83]

One point raised by commentators regards membership totals. The WTO membership is less than the UN membership, therefore it was argued that, in order for all the provisions of the treaty to apply it has to be open only to WTO members. This is an opinion that is not shared by this author. The WTO has had 164 members since 29 July 2016.[84] The problem that could arise would be one of recourse to the dispute settlement body (DSB). Meaning, how to allow access to the DSB for those 29 countries that are members of the UN but not the WTO.[85] The solution would be attached to the governance structure of the WTO. One solution could be to accept the MCTT as a plurilateral agreement within the WTO realm.

The Marrakesh Agreement (WTO 1999: 4) is the agreement establishing the WTO. It thus sets the guiding principles by means of which the WTO is to operate, including its scope, functions, structure, relationship with other organisations and decision-making power. Therefore, it is a framework convention agreement, guiding all the other multilateral and plurilateral agreements operating within the WTO system, which means that the preamble of the Marrakesh Agreement also aims to provide context to all the other multilateral and plurilateral agreements included in the annexes.[86] The inclusion of an environmental objective in the Marrakesh Agreement implies that *all* multilateral and plurilateral agreements operating within the WTO framework convention (including the GATT, GATS and Subsidies and Countervailing Measures (SCM) Agreements) are to be interpreted in light of that environmental object and purpose.[87] In that sense, the preamble of the Marrakesh Agreement provides for

[83] For an overview of the issues arising from international tax dispute resolution systems see Gutmann 2023. A more advocacy based explanation is available in the report prepared by the South Centre to the UN FACTI Panel (South Centre n.d.: 4).

[84] https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm; The UN has 193 members.

[85] Important to note also that UN agreements can sometimes not be ratified by all countries, as is the case with the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), and the Convention on the Rights of the Child (CRC).

[86] Irrespective of that, other agreements have also included a specific environmental objective in the preambular language, or in the text of the agreement itself. These are: the Agreement on Technical Barriers to Trade (where the preamble recognises that 'no country should be prevented from taking measures necessary […] for the protection […] of the environment'); and the Agreement on Trade-Related Aspects of Intellectual Property Rights (where Article 27 provides that States may exclude certain inventions from patentability if their commercial exploitation will lead to serious prejudice to the environment). WTO 1999: 121 and 332.

[87] This understanding is confirmed by *US-Shrimp,* which stated that 'This (preambular) language demonstrates a recognition by WTO negotiators that optimal use of the world's resources should be made in accordance with the objective of sustainable development. As this preambular language reflects the intentions of the negotiators of the *WTO Agreement,* we believe it must add colour, texture and shading to our interpretation of the agreements annexed to the *WTO Agreement,* in this case, the GATT 1994. We have

the following WTO objectives be observed: (i) sustainable development; (ii) environmental preservation and protection; and (iii) optimal use and consumption of natural resources.[88]

The GATT preceded the creation of the WTO itself. When the WTO was created, all GATT contracting states will have consented to the WTO Agreement[89] in order to become part of the GATT. Therefore, an environmental object and purpose, when stated in the preamble of the WTO agreements, expresses a manifest intention to take into account environmental goals in shaping trade rules. The WTO agreements could therefore be used to create environmental rights and duties, provided they are framed within a trade context (Jonas and Saunders 2021: 580 and 581). More importantly, the establishment of an object and purpose within the realm of the Marrakesh Agreement has led the WTO to privilege the upholding of environmental obligations over trade obligations (WTO 2016). The relationship between multilateral or plurilateral environmental agreements (MEA) and the WTO is a topic that has long been discussed by its membership.

In the Doha Declaration,[90] members agreed to clarify the relationship between WTO rules and MEAs, *only* with respect to MEAs that contain a specific trade obligation. The WTO secretariat has expressed the concern manifested by some members that MEA-related disputes could be brought to the WTO DSB. It is believed that disputes arising between two MEA parties (who are also WTO members) would be best settled under the MEA dispute resolution mechanism, whereas disputes arising between MEA parties and non-parties (where both are WTO members) could be addressed through the WTO dispute settlement mechanism, because the non-member would not have access to the MEA's dispute settlement mechanism (WTO 2004: 36). The understanding that stands today is that only the DSB will be able to resolve issues involving two WTO members that are not parties to the same MEA, or two MEA contracting states (in the case of the MCTT) who might not both be members of the WTO.

---

already observed that Article XX(g) of the GATT 1994 is appropriately read with the perspective embodied in the above preamble.' (WTO 1998, para. 153.)

[88] For a more thorough assessment of the interaction between the WTO and Multilateral Environmental Agreements, see Falcão 2019a, chapter 8. This text is based on those findings.

[89] Expressed as the Marrakesh Agreement, either through accession (if they were already members of the GATT 1947) or through deposit of the required instrument. After 1 January 1995, the GATT 1947 became the WTO, and therefore anyone agreeing to the GATT automatically became a WTO member, and will therefore have ratified the Marrakesh Agreement (creating the WTO). Certain agreements contained in annexes 1 and 2 and elements of the WTO agreement might not apply if a member has expressed its disagreement with a determined provision, on the date it becomes a member (art. XIII(1) Marrakesh Agreement). See also Dadush and Osakwe 2015.

[90] Para. 31(i) Doha Declaration.

A number of solutions have been suggested by WTO members in dealing with issues of incompatibility between WTO rules and MEAs, most of which provide 'preference' to the MEA in question and try to work out a mechanism by which the WTO rules would be suspended, waived or overlooked to allow the environmental rule to operate. None of these ideas were final, they were only suggestions, but they could turn out to be solutions in the event of a conflict (WTO 1996a, paras. 11 to 18).

By assigning the role of co-administrators of the MCTT to the UNFCCC and WTO, the relationship between the MCTT and other trade obligations could be settled in a targeted way. The main issue is that there would, ultimately, be no restriction in terms of access to the DSB body, even for non-WTO members who are contracting states under the MCTT.

Notably, it is possible that the WTO DSB would need to ensure that its judging panel always includes at least one expert in international taxation, to inform the decision-making process. However, even that might not be too big an ask, considering the many areas of intersection between trade and tax law, and the ever-closer dimension of both agendas in the modern development of international law.

In the same vein, other regional treaties objectifying the same goals as those supported by the MCTT would have residual rights to resolve issues arising under the MCTT when involving two of its members. There would not be much scope for this level of reconciliation in the current state of the art of environmental regulations, but one example that could come to mind raised by one commentators would be the Energy Charter Treaty.[91]

6.2.1. Timely issues concerning politics

At the time of writing of this paper, one issue that could question the efficiency of attributing the dispute resolution function of the MCTT to the WTO DSB is the stalemate that currently exists at the level of the Appellate Body, following unilateral actions by one member to question the authority of the decisions rendered by that body, and ultimate blockage of the process of appointment of Appellate Body members. Since 2019, the Appellate Body has been a judgeless court, which has compromised the ability to resolve disputes between members (van den Bossche 2023). Members have been engaging in an ample process of reform of the WTO DSB known as the Walker Process (van den Bossche 2023: 8–12) and have ultimately agreed on the creation of a Multi-Party Interim Appeal Arbitration Arrangement as a form of political arrangement to overcome the

[91] United Nations, Energy Charter Treaty, 22 November 2022, https://www.energychartertreaty.org/modernisation-of-the-treaty/

paralysis of the DSB.[92] Whether or not the use of the WTO DSB will be viable in the short term will therefore be an issue that will need to be assessed by countries when this treaty is negotiated.

Mitigation of carbon dioxide emissions is, notwithstanding, a developing story – both in terms of establishing a higher ground for increased political commitment by countries, and in terms of adoption of binding approaches to reach the goals humanity has set for itself via the Paris Agreement. A recent development pertaining to the tax field has been the adoption of UN GA Resolution A/c.2/78/L.18/Rev.1 with the aim of establishing a United Nations framework convention on international tax cooperation (UNGA 2023b).

A framework convention on international tax cooperation is, in practice, assimilable to the role the Marrakesh Agreement plays in trade relations, as explained here. It allows countries to establish a basic framework convention that will provide the object and purpose of all the other multilateral, regional and plurilateral agreements negotiated by the parties under the auspices of that framework. The Marrakesh Agreement is the framework convention to all the WTO multilateral and plurilateral agreements, as the UNFCCC is the framework umbrella convention to the Kyoto Protocol and the Paris Agreement.

The advantage of such a structure, as has been demonstrated by the practical implementation of the two examples above, is that the agreements adopted under that unified framework do not need to be connected, or hierarchical, even if as a best practice they should not be contradictory. In practice this means that a UN framework convention could host independent binding treaties, agreements, and soft law instruments in topics pertaining to direct and indirect taxation, including environmental taxation (as an overarching topic to cover a carbon tax).

It could also host a dispute settlement mechanism that is akin to the one existing under the WTO framework. Interestingly, in speaking of the UN system, it is this author's opinion that there might already be a dispute settlement body in place to handle issues pertaining to environmental taxation. As previously mentioned (see section 1.1), on 29 March 2023 the UNGA requested an advisory opinion from the ICJ on the obligation of states in respect of climate change (UNGA 2023a).

The UNGA asked the court what are the obligations of states to ensure the protection of the climate system and other parts of the environment from anthropogenic emissions of greenhouse gases. Were the decision to consider the role of states in the mitigation of anthropogenic GHG emissions, it would, in practice, consider the actions states can undertake to reduce carbon dioxide emissions into the atmosphere. 'Mitigation is a human intervention to reduce the sources or enhance the sinks of greenhouse gases' (IPCC 2014: 4). The actions

[92] As of 1 September 2023, 26 WTO members were party to the MPIA, including Brazil, Canada China, the EU, Japan and Mexico (van den Bossche 2023: 13).

conducive of reducing the sources of carbon dioxide emissions are the fiscal measures discussed in section 3.3, and include a carbon tax, the adoption of implicit carbon prices, and the elimination of negative carbon prices. These are the instruments capable of fostering a change in consumer behaviour based on the carbon intensity of the product and financing energy substitution.

An ICJ decision on states' obligation to mitigate emissions therefore indirectly touches on the administration of tax policies. Such a decision could open the way to, over time, extending the competence of the ICJ to also cover disputes concerning the administration of environmental taxes, and – why not? – cross-border conflicts concerning tax.

Were this to be the case, the governance structure of this MCTT could be reconsidered to attribute to the ICJ the dispute resolution function. That would streamline processes and keep the secretariat within the realm of the United Nations agencies, which would add simplicity to the governance structure.

This paper started by highlighting that one of the main considerations in the writing of the body of the MCTT text was the workability of the rule today. Meaning, this is a treaty that should be implemented under the current legal order, taking into account the existing framework and not a future order. This section has deviated from that, to account for a possible future scenario, in light of the combined impact of a WTO DSB that is under stalemate and an adopted UNGA Resolution for the creation of a UN framework convention on tax cooperation. It is added here for argumentative purposes, but not included in the body of the MCTT text.

6.3. Authenticity of the text

The last point on the governance structure regards the language of authenticity of the text in Article 31, a topic that was the object of unexpected scrutiny. This being a UN agreement, it has to be concluded in the five official languages of the UN – Chinese, English, French, Russian and Spanish. However, different to the practice when concluding bilateral tax treaties, the option was made under the MCTT to follow the academic best practice and assign a prevailing text.

This means that the official version of the treaty would still be translated into all the official UN languages. Countries ratifying the MCTT could likewise translate into their national languages if that is a legal requirement in their state, but if there is a dispute arising out of the interpretation of one or more terms of the treaty, or ambiguity or divergence between different language versions of the same text, the English language version prevails. This is in line with Article 33(1) of the Vienna Convention on the Law of Tax Treaties (Michel 2021). The use of a

prevailing text has the purpose of reducing conflict in interpretation. That was the approach adopted in the MCTT, as per international best practices.[93]

7. Conclusion

Agreeing on a unified text for the taxation of carbon is no small feat. Were this treaty to be put into effect, it would represent a major leap towards meeting the climate objectives of the Paris Agreement. It would also mark unprecedented levels of cooperation between nations across the world on the topic of climate change. An agreement on a common MCTT text would also further the codification of legal principles, taxonomies, and approaches in environmental and tax law that have long required uniformity in literature to be able to further the debate on climate mitigation approaches.

The relevance of this treaty is immense, and yet, it would only be the first step towards a *de minimis* approach to taxing carbon. With huge potential for further expansion into agreements for higher ground standards in the future. This is only just the first step.

[93] According to Resch, it is adopted by 2/3 of the plurilateral agreements concluded since the 90s and is currently the prevailing policy (Resch 2018).

References

African Union (2023) The African Leaders Nairobi Declaration on Climate Change and Call to Action, 6 September 2023, https://media.africaclimatesummit.org/Final+declaration+1709-English.pdf?request-content-type=%22application/force-download

Agnolucci, P.; Fischer, C.; Heine, D.; de Oca Leon, M.M. and Pryor, J. (forthcoming) *Measuring Total Carbon Pricing*, World Bank

Ambagtsheer-Pakarinen, L. (2023) 'Parliaments Adopts "Salmon Tax"', *IBFD News*, 1 June

Black, S.; Parry, I.W.H. and Zhunussova, K. (2023) *Is the Paris Agreement Working? A Stocktake of Global Mitigation*, Staff Climate Notes 2023/002, Washington, DC: International Monetary Fund

Black, S.; Minnett, D.; Parry, I.; Roaf, J. and Zhunussova, K. (2022) *A Framework for Comparing Climate Mitigation Policies Across Countries*, IMF Working Paper 2022/254, IMF

Center for Climate and Energy Solutions and Energy Defense Fund (2022) *The Global Stocktake: An Opportunity for Ambition*, https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202202281810---C2ES_EDF%20Climate%20Finance%20Landscape%20Analysis%20Themes%20and%20Trends.pdf

Centre for International Sustainable Development Law (2012) *Legal Analysis on the Inclusion of Civil Aviation in the European Union Emissions Trading System* (V.M. Tunteng, ed.)

Centre for International Sustainable Development Law (2002) *The Principle of Common but Differentiated Responsibilities: Origins and Scope for the World Summit on Sustainable Development 2002*, Legal Brief

Coase, R. (1960) 'The Problem of Social Cost', *Journal of Law and Economics* 3: 1–44

Dadush, U. and Osakwe, C. (eds.) (2015) *WTO Accessions and Trade Multilateralism: Case Studies and Lessons*, Cambridge University Press

Dominioni, G.; Heine, D. and Martinez Romera, B. (2018) *Regional Carbon Pricing for International Maritime Transport: Challenges and Opportunities for Global Geographical Coverage*, WPS 8319, World Bank

Dutch District Court (The Hague) (2021) No. C/09/571932/HA ZA 19-379 (26 May 2021)

Economist's Statement on Carbon Dividends Organized by the Climate Leadership Council, https://www.econstatement.org/

Eichner, T. and Pethig, R. (2019) 'EU-type Carbon Regulation and the Waterbed Effect of Green Energy Promotion', *Energy Economics* 80: 656–679

European Commission (2019) *Taxes in the Field of Aviation and their Impact,* Final Report, CE Delft

European Commission (2012) 'Proposal for a Council Decision on the position to be taken by the European Union within the EU-ICAO Joint Committee, concerning the Decision on the adoption of an Annex on aviation security to the Memorandum of Cooperation between the European Union and the International Civil Aviation Organization providing a framework for enhanced cooperation, COM/2012/0457 final (14 August 2012), https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52012PC0457&from=DE

European Commission (2008) *Air and Environment*, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0101

European Commission (n.d.) *ICAO Cooperation Areas*, https://transport.ec.europa.eu/transport-modes/air/international-aviation/european-union-icao/icao-cooperation-areas_en

European Parliament (2023) Proposal for a regulation of the European Parliament and of the Council on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act), https://single-market-economy.ec.europa.eu/publications/net-zero-industry-act_en

European Union (2023) Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2023:130:FULL

European Union and ICAO (2011) Memorandum of Cooperation between the European Union and the International Civil Aviation Organization providing a framework for enhanced cooperation, OJ L 232/2 (9 Sep. 2011), https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:232:0002:0007:EN:PDF

Faber, J. and O'Leary, A. (2018) with a contribution by P. Mendes de Leon, *Taxing Aviation Fuels in the EU*, CE Delft

Faber, J. and van Wijngaarden, L. (2019) *Economic and Sustainability Impacts of an Aviation Tax: New Variants*, CE Delft

Falcão, T. (2023) 'A UN Tax Body Made for You and Me', *Tax Notes International*, 7 August

Falcão, T. (2021a) 'EU Courts Use Precautionary Principle to Prevent Climate Change', *Tax Notes International*, 11 October: 199

Falcão, T. (2021b) 'Highlights of the United Nations Handbook on Carbon Taxation', *Intertax* 49.11: 897–914

Falcão, T. (2021c) 'Ensuring an EU Carbon Tax Complies with WTO Rules', *Tax Notes International* 101.1, 4 January

Falcão, T. (2021d) 'Updating Carbon Tax Policy Is Crucial to the EU Green Deal', *Tax Notes International*, 26 July

Falcão, T. (2020) 'Taxing Carbon Emissions on the High Seas', *Tax Notes International*, 31 August: 1199

Falcão, T. (2019a) *A Proposition for a Multilateral Carbon Tax Treaty*, IBFD Doctoral Series

Falcão, T. (2019b) 'Taxing Carbon Emissions from International Shipping', *Intertax* 47.10: 832–851

Falcão, T. (forthcoming) 'Paying the Piper: On the Legal Qualification of Carbon Prices', in R. Saraiva and P.A. Pardel (eds) *Sustainable Finances and the Law Between Public and Private Solutions*, Springer, currently available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4336765

Falcão, T. and Englisch, J. (2021) 'EU Carbon Border Adjustments for Imported Products and WTO Law, *Environmental Law Reporter* 51: 10857, October (part 1) and *Environmental Law Reporter* 51, 10935: November (part 2)

Forsyth, P. (2019) *Aviation Taxes – Impacts, Costs and Benefits,* Department of Economics, Monash University

Garsous, G. *et al*. (2023) *Net Effective Carbon Rates*, OECD Taxation Working Papers No. 61, OECD

G7 (2022) Terms of Reference for the Climate Club, 12 December 2022, https://www.g7germany.de/resource/blob/974430/2153140/a04dde2adecf0ddd38cb9829a99c322d/2022-12-12-g7-erklaerung-data.pdf?download=1

German Emissions Trading Authority (DEHSt), https://www.dehst.de/EN/national-emissions-trading/national-emissions-trading_node.html

Global Carbon Pricing Challenge, https://www.globalcarbonpricingchallenge.org/

Gutmann, D. (2023) 'The Future of International Tax Dispute Resolution Post-BEPS and MLI' in W. Haslehner, T. Lyons, K. Pantazatou, G. Kofler and A. Rust (eds.) *Alternative Dispute Resolution and Tax Disputes*, Elgar Online

Heine, D.; Gäde, S.; Dominioni, G.; Martinez, R. and Pieters, A. (2015) *A Regional Solution for a Transnational Problem? A Mechanism to Unilaterally Tax Maritime Emissions While Satisfying Extraterritoriality, Tax Competition and Political Constraints*, Working Paper Series No. 2014/06, Rotterdam Institute of Law and Economics (RILE)

Hong, D. and Slatick, E.R. (1994) *Carbon Dioxide Emission Factors for Coal*, Quarterly Coal Report: 1–8.

Intergovernmental Panel on Climate Change (IPCC) (2014) 2014 Report on Mitigation of Climate Change, Summary for Policy Makers, https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_summary-for-policymakers.pdf

Intergovernmental Panel on Climate Change (2007a) *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge and New York: Cambridge University Press, https://www.ipcc.ch/site/assets/uploads/2020/02/ar4-wg3-sum-vol-en.pdf

Intergovernmental Panel on Climate Change (2007b) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Solomon *et al*. (eds.), Cambridge and New York: Cambridge University Press

Intergovernmental Panel on Climate Change (2006a) *IPCC Guidelines for National Greenhouse Gas Inventories,* Vol. 2: Energy, Ch. 4: Fugitive Emissions, http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_4_Ch4_Fugitive_Emissions.pdf

Intergovernmental Panel on Climate Change (2006b) *IPCC Guidelines for National Greenhouse Gas Inventories, National Inventory*, Vol. 1, Ch. 8, https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1_Volume1/V1_8_Ch8_Reporting_Guidance.pdf.

Intergovernmental Panel on Climate Change (2000) 'Fugitive Emissions from Oil and Natural Gas Activities', in *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*: 103-127, http://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_6_Fugitive_Emissions_from_Oil_and_Natural_Gas.pdf

International Civil Aviation Organization (ICAO) (2006) *Convention on International Civil Aviation,* Doc 7300/9, https://www.icao.int/publications/Documents/7300_cons.pdf

Intergovernmental Panel on Climate Change (n.d.) *World Air Services Agreement*, Explanatory Notes, https://data.icao.int/WASA/AboutWASA/WASAExplanatoryNotes

International Maritime Organization (IMO) (2018) *Initial IMO Strategy on Reduction of GHG Emissions from Ships,* Res. MEPC.304(72), Annex 11, adopted on 13 April 2018

International Maritime Organization (IMO) *Third IMO GHG Study 2014* (2015), https://greenvoyage2050.imo.org/wp-content/uploads/2021/01/third-imo-ghg-study-2014-executive-summary-and-final-report.pdf

Irschlinger, T. and Tipping, A. (2023) *The WTO Agreement on Fisheries Subsidies: A Reader's Guide*, IISD

Jonas, D. and Saunders, T.N. (2021) 'The Object and Purpose of a Treaty: Three Interpretative Methods', *Vanderbilt Law Review* 43

Keen, M. and Strand, J. (2006) *Indirect Taxes on International Aviation,* IMF Working Paper No. 06/124

Keen, M.; Parry, I. and Strand, J. (2013) *Planes, Ships and Taxes: Charging for International Aviation and Maritime Emissions*, IMF

Kennedy, K.; Obeiter, M. and Kaufman, N. (2015) *Putting a Price on Carbon: A Handbook for US Policymakers*, Working Paper, World Resources Institute

Kruse-Andersen, P.K.; Beck, U. and Stewart, L.B. (2021) *Carbon Leakage in a Small Open Economy: The Importance of International Climate Policies*

Mann, R. (2022) 'Targeting Plastic Pollution', *Journal of Land Use* 37:2, Spring 2022: 13–27

Mariani, G. *et al*. (2020) 'Let More Big Fish Sink: Fisheries Prevent Blue Carbon Sequestration – Half in Unprofitable Areas', *Science Advances Journal* 6.44

Michel, B. (2021) 'International Association of Tax Judges Webinar: Tax Courts and the Interpretation of Plurilingual Tax Treaties', *IBFD Bulletin for International Taxation* 75.6

Neiva *et al*. (2021) *Study on the Taxation of the Air Transport Sector,* Final Report, Report for European Commission (DG TAXUD), Ricardo Confidential

OECD (2022) Pricing Greenhouse Gas Emissions: Turning Climate Targets into Climate Action, November 2022, https://www.oecd-ilibrary.org/sites/e9778969-en/1/3/1/index.html?itemId=/content/publication/e9778969-en&_csp_=52c8137b50988e25208d117dee9bbae3&itemIGO=oecd&itemContentType=book

OECD/IMF (2022) *Delivering Climate-Change Mitigation under Diverse National Policy Approaches: An Independent IMF/OECD Report to Support the German 2022 G7 Presidency*, Paris: OECD Publishing

O'Leary, A. (2022) *Freedom to Regulate the High Seas: How Countries Can Meet Their Paris Agreement Obligation to Reduce the Climate Impact of International Shipping without Conflicting with Existing International Law*, Opportunity Green

Our Fish (2023) *Better Use of Public Money: The End of Fuel Subsidies for the EU Fishing Industry*, Our Fish

Pache, E. (2019a) *Implementation of Kerosene Fuel Taxation in Europe, Part I: Legal Foundations and Issues*, Julius-Maximilians-Universität Würzburg

Pache, E. (2019b) *Implementation of Kerosene Fuel Taxation in Europe Part II: Legal Approaches*, Julius-Maximilians-Universität Würzburg

Parker, R. *et al*. (2018) 'Fuel Use and Greenhouse Gas Emissions of World Fisheries, *Nature Climate Change* 8: 333– 337

Parry, I.W.H. *et al*. (2021) *Carbon Pricing – What Role for Border Carbon Adjustments?* Staff Climate Notes 2021/004, Washington, DC: International Monetary Fund

Parry, I.W.H.; Roaf, J. and Black, S. (2021) *A Proposal for an International Carbon Price Floor Among Large Emitters*, IMF Staff Climate Notes 2021/001, Washington, DC: International Monetary Fund

Parry, I.W.H.; Veung, C. and Heine, D. (2015) 'How Much Carbon Pricing Is in Countries' Own Interests? The Critical Role of Co-Benefits', *Climate Change Economics* 6.4

Parry, I.W.H.; Heine, D.; Lis, E. and Li, S. (2014) *Getting Energy Prices Right: From Principles to Practice*, Washington DC: International Monetary Fund

Platform for Collaboration in Tax (2023) *Carbon Pricing Metrics: Analyzing Existing Tools and Databases of Platform for Collaboration on Tax (PCT) Partners*, PCT, https://www.tax-platform.org/sites/pct/files/publications/PCT-CPM-Report.pdf

Pigou, A. (1932) *The Economics of Welfare*, 4th ed., London: Macmillan

Pirlot, A. (2022) 'Carbon Leakage under International Climate Change Law: Myth, Environmental Risk, or Economic Problem?', presented during the Global Tax Symposium 2022, 1 and 2 December 2022

Resch, R.X (2018) *The Interpretation of Plurilingual Tax Treaties: Theory, Practice, Policy*, Hamburg: Tredition

Sala, A. *et al*. (2022) 'Energy Audit and Carbon Footprint in Trawl Fisheries', *Scientific Data* 9.428.

Schelling, T. (2009) 'International Coordination to Address the Climate Challenge', *Innovations: Technology, Governance, Globalization* 4.4: 13–21

Scott, J. (2015) 'The Geographical Scope of the EU's Climate Responsibilities', *Cambridge Yearbook of European Legal Studies* 17

South Centre Tax Initiative (n.d.) Comments to the FACTI Panel Interim Report, https://factipanel.org/inputpdfs/South%20Centre%20FACTI%20nterim%20Report%20final.pdf

Stern, N. (2006) *The Economics of Climate Change: The Stern Review*, Cambridge: Cambridge University Press

Stern, N., and Lankes, H.P. (2022) *Collaborating and Delivering on Climate Action through a Climate Club: An Independent Report to the G7*, London School of Economics

United Nations (2023) Agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, General Assembly, intergovernmental conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, further resumed fifth session, New York, 19 and 20 June 2023, https://www.un.org/bbnj/

United Nations (2021) UN Handbook on Carbon Taxation for Developing Countries, https://financing.desa.un.org/document/un-handbook-carbon-taxation-developing-countries-2021

United Nations (2015) Paris Agreement, https://unfccc.int/sites/default/files/english_paris_agreement.pdf

United Nations (1998) Kyoto Protocol to the United Nations Framework Convention on Climate Change, https://unfccc.int/resource/docs/convkp/kpeng.pdf

United Nations (1992a) United Nations Framework Convention on Climate Change, https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

United Nations (1992b), Rio Declaration on Environment and Development, A/CONF.151/26 (Vol. I), https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf

United Nations (n.d.) Energy Charter Treaty, https://www.energychartertreaty.org/modernisation-of-the-treaty/

UNFCCC (2023a) COP28 deal, named the UAE Consensus (Draft Decision – CMA.5 of 13 December 2023), Outcome of the first global stocktake, FCCC/PA/CMA/2023/L.17, paragraph 28 (b), (d) and (e), https://unfccc.int/sites/default/files/resource/cma2023_L17_adv.pdf

United Nations (2023b) Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (COP27), Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its fourth session, held in Sharm el-Sheikh from 6 to 20 November 2022, part two: Action taken by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its fourth session, FCCC/PA/CMA/2022/10/add.1, 17 March 2023, https://unfccc.int/documents/626569

United Nations (2022) Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its third session, held in Glasgow from 31 October to 13 November 2021, FCCC/PA/CMA/2021/10/Add.1, Decision 1/CMA.3, Glasgow Climate Pact, https://unfccc.int/sites/default/files/resource/cma2021_10_add1_adv.pdf

United Nations (2021) Nationally determined contributions under the Paris Agreement, Synthesis Report by the Secretariat, FCCC/PA/CMA/2021/8, pg. 4, https://unfccc.int/sites/default/files/resource/cma2021_08_adv_1.pdf

United Nations (n.d.) Technical Dialogue of the First Global Stocktake, https://unfccc.int/topics/global-stocktake/components-of-the-gst/technical-dialogues-of-the-first-global-stocktake

UNGA (2023a) 'Request for an Advisory Opinion of the International Court of Justice on the Obligations of States in Respect of Climate Change' UN Doc A/RES/77/276, 29 March 2023, https://digitallibrary.un.org/record/4008332?ln=en

UNGA (2023b), Resolution A/c.2/78/L.18/Rev.1 adopted during the 25th Economic and Financial Committee (second committee) plenary meeting on 22 November 2023, https://www.un.org/en/ga/second/78/votingsheets.shtml

US Congress (2021) Proposal for a Border Carbon Adjustment Measure: Fair, Affordable, Innovative, and Resilient Transition and Competition Act of 2021, https://www.congress.gov/bill/117th-congress/senate-bill/2378

van den Bossche, P. (2023) *Can the WTO Dispute Settlement System be Revived? Options for Addressing a Major Governance Failure of the World Trade Organization*, WTO Working Paper 03/2023

White House (n.d.) Inflation Reduction Act Guidebook, https://www.whitehouse.gov/cleanenergy/inflation-reduction-act-guidebook/

World Bank, States and Trends of Carbon Pricing 2022, https://openknowledge.worldbank.org/entities/publication/a1abead2-de91-5992-bb7a-73d8aaaf767f

WTO (2022) Agreement on Fisheries Subsidies Ministerial Decision of 17 June 2022, WT/MIN(22)/33, 12th Session of the Ministerial Conference, 22 June 2022, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN22/33.pdf&Open=True

WTO (2016) *The Doha Mandate on Multilateral Environmental Agreements (MEAs)* https://www.wto.org/english/tratop_e/envir_e/envir_neg_mea_e.htm

WTO (2014) *Appellate Body Report, China – Measures Related to the Exportation of Rare Earths, Tungsten, and Molybdenum*, para. 141, WTO Doc. WT/DS431, 432, 433/AB/R (adopted 29 Aug. 2014)

WTO (2004) *Trade and Environment at the WTO*, https://www.wto.org/english/tratop_e/envir_e/envir_wto2004_e.pdf

WTO (2001a) *Panel Report, European Communities – Measures Affecting Asbestos and Products Containing Asbestos*, para. 8.233, WTO Doc. WT/DS135/R (adopted 5 Apr. 2001)

WTO (2001b) *Appellate Body Report, United States – Import Prohibition of Certain Shrimp and Shrimp Products*, *Recourse to Article 21.5 by Malaysia*, para. 134, WTO Doc. WT/DS58/AB/RW (adopted 21 Nov. 2001)

WTO (1999) *The Legal Texts: The Results of the Uruguay Round of Multilateral Trade Negotiations*, Cambridge University Press

WTO (1998) *Appellate Body Report, United States – Import Prohibition of Certain Shrimp and Shrimp Products*, para. 166, WTO Doc. WT/DS58/AB/R (adopted 6 Nov. 1998)

WTO (1996a) *Report of the Committee*, Committee on Trade and Environment, Doc. WT/CTE/W/40 (12 Nov. 1996)

WTO (1996b) *Appellate Body Report, United States – Standards for Reformulated and Conventional Gasoline*, WTO Doc. WT/DS2/AB/R (adopted 20 May 1996)

WTO (1996c) *Panel Report, United States – Standards for Reformulated and Conventional Gasoline* (*US-Gasoline*), WT/DS2/R, at para. 6.24 (29 Jan. 1996)

WTO/GATT (1970) Border Tax Adjustments, Report of the Working Party adopted on 2 December 1970 (Doc. L/3464)

www.ictd.ac