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Tax Cooperation on Climate Change[1]

Summary
This scoping paper was prepared to give a first consideration in this forum of some of the areas where greater international tax cooperation might enhance the effectiveness of domestic responses to climate change, including considering possible issues that may arise under the UN Model Double Tax Convention. It is presented as the basis for a first discussion on the issues involved.

[1] This paper was prepared by the Secretariat. It is a scoping paper and should not be taken as necessarily representing the concluded views of the Secretariat. It should not be taken as necessarily reflecting views of UNDESA, the United Nations or the UN Tax Committee. The valuable assistance of the Special Unit on South-South Cooperation of the UN Development Programme in providing the able research assistance of Ms. Erika Siu as part of the South-South Sharing of Successful Tax Practices (S4TP) project is gratefully acknowledged.

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> *[C]ountry-by-country legislation and measures form a risk of market distortion with implications for competitiveness, and tax avoidance and arbitrage opportunities. It is crucial that governments work closely with each other and establish a coordinated approach, adapting and adopting the success stories and new approaches to unlock the potential of environmental taxes and incentives to make a significant contribution to the fight against climate change.*
>
> -- Mark Schofield & Harry Manisty, Time Arrives for Coordination on Green Taxes, Int'l Tax Rev. June 2009.

Introduction.

This paper discusses areas where greater international tax cooperation may support domestic responses to climate change rather than rendering them less effective than was intended, including addressing possible double taxation and tax avoidance issues. To focus the consideration, and in view of the enormous challenges posed by climate change issues, the paper concentrates on climate change rather than other environmental issues, but many of its conclusions would equally relate to other environmental issues.

"Command and control"versus "market based" approaches. There are two broad types of governmental responses to climate change: (a) so called "command and control" methods, which involve direct governmental regulation and (b) "market based" approaches, such as subsidies, taxes, and emissions trading schemes. Market based approaches use market forces to find innovative and cost-effective solutions to mitigate climate change while "internalising" the social costs of pollution, so that the polluter, rather than the general community, bears the cost of that pollution.

Three market based approaches will be discussed below: emissions trading schemes, carbon taxes, and green tax incentives.

1. Emissions Trading Schemes or "Cap & Trade" Systems

1.1 Quantity v. Price in Limiting Emissions

Emissions trading schemes and carbon taxes are often compared because they address climate change mitigation by controlling either the quantity or the price of carbon emissions.

(i) Quantity: An emissions trading system caps the amount of pollution at a certain level, and rights to pollute to a combined total of that level are made available as permits that can be bought and sold. This is called "cap and trade" and has been adopted throughout the European Union, for example.

ii) Price: A tax on polluting activities, either on the polluting activity directly or on products such as fuels which, when used, create the environmental damage. This is often called a "carbon tax". Examples are found in Denmark, Finland, Norway and Sweden.

There has been a long debate about the respective merits of *price* versus *quantity* instruments to achieve emission reductions, and a mixed system is possible (e.g. a cap and trade system with a minimum price set). A cap and trade system is a *quantity* instrument because it fixes the overall emission level (quantity) and allows the price to vary as permits are traded and find their own level according to the market. Price remains uncertain though quantity is set (subject to further permits being made available in future).

In contrast, an emission tax is a *price* instrument because it fixes the price while the level of emissions will vary according to how the market responds to that price. In this sense, price is certain (though the tax may vary over time), while the quantity of emissions is not set and will depend on market conditions.

This paper does not address the pros and cons of these different approaches to reducing emissions, or hybrids such as a cap and trade system with a minimum price set, but rather looks to how greater international tax cooperation can support and make more effective such domestic responses rather than make them less effective than was intended, including addressing possible double taxation and tax avoidance issues.

1.2 Tax Treatment of Permit Holders

How is the "cap" taxed in a "cap and trade system"? As noted above, instead of taxing greenhouse gas emissions, an emissions trading scheme allows each permit holder to emit a certain amount of CO_2 into the atmosphere. Governments may sell the emissions permits or freely distribute them, resulting in multiple forms of tax treatment to permit holders. As such trading may occur internationally and international tax issues will therefore inevitably arise.

Variation calls for collaboration. Classification of emissions permits varies from current to capital assets with varying schedules of depreciation. For example, in Germany, emission rights qualify as intangible current assets, valued at lowest of cost or market value, whereas in Sweden the emission rights qualify as stock (a capital asset), valued at net sales value or at acquisition cost.[2] Further, the deductibility of certain expenses associated with the permits varies as well. In Germany, the penalty for exceeding permitted emissions is a deductible expense whereas in Sweden penalties are not deductible.[3] (A chart with further tax treatment comparisons is at Appendix 1) Given this variation, knowledge sharing internationally is crucial to evaluating and identifying effective and non-distortionary tax treatment and preventing double taxation that may impede the effectiveness of such schemes, as well as limiting opportunities for unintended double non-taxation.

[2] Anuschka Bakker, ed., Tax and the Environment: A World of Possibilities 494 (2009).
[3] Id.

1.3 Tax Treatment of the Emissions Permit Trade

How is the "trade" taxed? The trade is typically taxed in two ways: through a direct tax on the profits and a value added tax (VAT) on the transaction. The VAT is discussed below at 1.4 and trading profits are addressed in this section.

Domestic & international aspects of emissions permit trading. Permit holders who can upgrade their facilities or alter their practices to decrease greenhouse gas emissions at the lowest cost will have the incentive to sell unused emissions permits to other polluters with higher abatement costs. Domestically, these trading profits are subject to direct tax, resulting in multiple forms of tax treatment depending on the classification of the permit. There is also the issue of international tax treatment. Depending on how the trading profits are treated under tax treaties, there is the potential for unintended instances of double taxation or double non-taxation.

OECD and UN Model Convention differences. It is our understanding that the OECD is not pursuing significant work on this issue because, regardless of treatment under OECD Model Convention Article 7 as "Business Profits," or Article 21 as "Other Income" (two possible treatments by countries under existing tax treaties), taxation of profits from emissions permit trading ends up being subject to residence country taxation. Because the UN Model differs from the OECD model and because there are other Articles that can potentially apply to the taxation of permit trading profits (whether or not they currently do in respect of countries having emissions trading schemes) and because the UN Model in key areas preserves more source State taxing rights, however, there are cases where the distributive rules of tax treaties may lead to source State taxation. The issue therefore needs to be looked at more closely under treaties based on the UN Model, as noted below.

POTENTIAL TAX TREATMENT OF EMISSIONS TRADING PROFITS

Article	***UN Model Convention***	***OECD Model Convention***	***Different Treatment?****
7: Business Profits	Residence based unless PE	Residence based unless permanent establishment (PE) or a "limited force of attraction rule" applies	No
13: Capital Gains	Residence based unless PE or alienation of immovable property	Residence based unless PE or alienation of immovable property	No
6: Immovable Property	Situs of immovable property; definition based on domestic law	Situs of immovable property; definition based on domestic law	No
21: Other Income	Source State may tax	Residence based	Yes
12: Royalties	Source State may tax up to an agreed %	Residence based unless PE	Yes

** There will be differences in the application of these distributive rules in particular situations but the purpose of this table is to highlight more fundamental differences in the applicable Articles.*

1.3.1 Article 7: Business Profits

Countries might consider emissions trading profits as business profits, which are taxed in the State of residence unless the taxpayer has a permanent establishment in the source State. In this case, the result is fundamentally the same under the OECD and UN Model. Although there are nuances, such as the different permanent establishment rules under the different Models and the "limited force of attraction rule" under the UN Model, which mean source country taxation is more likely under the UN Model rather than the OECD Model, they need not be addressed in this "scoping" paper.

Under both Models, where profits include items of income which are dealt with separately in other Articles, then the provisions of those Articles apply, rather than Article 7. This means that even though trading profits might very widely be regarded as a species of "business profits," there may be other Articles which apply, and effectively take precedence over Article 7.

1.3.2 Article 13: Capital Gains

Countries might also consider emissions trading profits as capital gains, which are taxed in the State of residence unless the taxpayer has a permanent establishment or fixed base in the source State and the permits can be regarded as the business property of the PE or fixed base, or unless the capital gain is derived from the alienation of immovable property (in which case Article 6 is the relevant Article, as discussed below).

As paragraph (4) of Article 13 has a special provision dealing with transfers of shares in companies, etc. that derive most of their value from immovable property situated in a Contracting State (and the OECD Model has since introduced as similar provision) the categorisation of permits as "immovable property" would have significant impacts on the operation of a double tax treaty. Some of the issues in relation to how Article 13(4) operates discussed at the Sixth annual session of the Committee are therefore potentially relevant in this respect.

1.3.3 Article 6: Immovable Property

An emissions permit may, at least conceptually, be considered immovable property because under both the OECD and UN Model, Article 6 contains certain items that are defined as "immovable property" *as well as* items considered as such under the law of the country in which the property in question is situated. Domestic law of such a country provides a base for the definition, then. And in practice it appears that many items not normally considered as "immovable" under normal linguistic usages are as a consequence treated as immovable properties under treaties. There are a myriad of domestic laws classifying "immovable property" and many include intangible rights related to the property.[4] A state might take the view that

[4] For example, in addition to its domestic laws, Australia reserves the right to include rights relating to all natural resources under Art. 6, and Mexico reserves the right to treat as immovable property any right that allows the use or enjoyment of immovable property situated in a contracting state where the use or enjoyment relates to time-sharing.

because an emissions permit must originate from immovable property[5] such as an industrial plant of a particular size (whether or not a *particular* plant), and the emissions permit gives the emitter a "right to pollute" profits from the alienation of this right can be considered as immovable property. In this case, the source State, which is the situs of the property, would have the right to tax the profits of emissions permit trading.

It might be argued, however, that domestic law should not determine the treatment of the permit for the following reasons:

(i) if such a classification was regarded as so divergent from the intended operation of Article 6 as to be inconsistent with the necessary good faith application of treaties under the Vienna Convention on the Law of Treaties or customary international law reflecting it; or

(ii) if the domestic law was not considered relevant since it was not the domestic law of the country in which the property in question is situated because the internationally traded permit should not be treated as situated in the country that issued the permit.

While in the case of (i) it is not a step lightly to be undertaken to treat the recourse to domestic law contemplated by the Article as a departure from good faith application of the treaty, the second argument is perhaps a more pertinent one in most cases. Even there, it might be difficult to show an accepted international meaning of where property is situated, where it is potentially "immovable property" under a treaty yet "movable" under normal linguistic usages. There is at least an argument that, in cases where domestic law treats an item as immovable and the treaty allows this domestic treaty to govern the treaty treatment, the "situs" rules in that domestic law should be followed unless they are so contrary to reality as to raise issues of good faith application of the treaty (such as treating a house situated in another country as situated in your country). These issues, and the likelihood of States legitimately applying Article 6 to the profits from trading permits, deserve further analysis.

What happens when the domestic laws of the two countries differ? When the domestic law meanings of "immovable property" differ, there is a so-called "conflict of qualification." Under Article 23, where income may be taxed by the source State "in accordance with the provisions of the Convention," the residence State must relieve any double taxation either through an exemption or credit. Thus, if the State where the property is located considers the permit profits to be under the meaning of "immovable property," that State may tax the profits and the residence State must relieve the double taxation where it considers the trading profits as a form of income that is residence based. Under Article 23, this relief may come in the form of an exemption or credit against taxes due in the residence country. Because Article 23 is the same under both the UN and OECD models, the taxation result would be fundamentally the same.

Can emissions permits be traced from the original emitter through the carbon market? If emissions permits are originally considered immovable property under domestic law and the

[5] The EU Emissions Trading Scheme does not cover the transportation sector. Brian J. Arnold, *At Sixes and Sevens: The Relationship Between the Taxation of Business Profits and Income from Immovable Property under Tax Treaties*, 60 Bulletin for Int'l Taxation 5, 7 n.12 (2006).

treaty, at what point do they lose the 'immovable' trait? After the first trade? The fifth? Or can the immovable property trait be traced infinitely through the carbon market? There is evidence of some amount of tracing income derived from immovable property from company to shareholders. For example, France considers shareholder income (and this includes profits from the sale of shares) derived from their corporation's use of immovable property within the respective country to be covered by Article 6.[6] Thus, if the shareholder is analogised to the permit buyer, who invests in the emissions permit just as he or she would in stock, the immovable property trait can be traced through the carbon market, and the profits from the trade may be taxed by the source country.

Ultimately, however, the answer to this question seems to be that to the extent the permit remains "immovable property" under the domestic law and therefore the treaty, the only real issue is the situs one mentioned above, because the tracing issues does not "trump" or override the domestic law status as immovable property.

1.3.4 Article 21: Other Income

In Article 21, the OECD Model provides that income not addressed by other Articles is taxable *only* by the residence State. This means there is little of a real issue of whether Article 7 or Article 21 applies to tax the profits of trading permits because these are the two most likely treatments by States applying their double tax conventions. The UN Model, however, provides that other income may also be taxed in the source State of that income, where that State is one of the treaty partners. Therefore, if the permit trading profits are classified as Other Income under Article 21, the taxation result may differ depending on which Model is employed. Both Models find wide acceptance in international practice, so this is a significant area of difference, if Article 21 can indeed apply. The main scope for greater international cooperation in this area would not be as to which version of Article 21 was preferable, but more as to clarifying when the "Other Income "Article, rather than, for example, Article 7 might be the applicable Article.

Differing interpretations of the treaty. Even if two countries have entered into a treaty based on the UN Model, they may consider permit trading profits as covered under different articles, which creates the potential for instances of double-taxation and double non-taxation. The issues are not fully explored under the current UN Commentary, but *prima facie*, if the differences relate to the application of different domestic rules as allowed by the treaty, the residence State would need to give an exemption or credit in relation to taxes in the source State. Where the difference is over the interpretation of the treaty (i.e. as to which Article applies), however, the matter may have to be resolved under the Mutual Agreement Procedure because the residence country need only give a credit or an exemption where the other country has taxed in accordance with the treaty. While there is a risk of double taxation, which can hopefully be avoided, the source State cannot be expected to yield its position in the MAP *merely* because of that possibility.

[6] *See* Arnold, *supra.* 'Income' includes profits from "exploitation, alienation, exchange as well as rental or leasing." *See, e.g.*, France - Tajikistan Income Tax Treaty, art. 11(1) (1985).

Consider the following examples, assuming States A and B have entered into a treaty based on the UN Model Convention:

Example 1: *Plant owner is a resident of State A, which considers profits from permits either Art. 7 (Business Profits), 13 (Capital Gains) but not immovable property under Article 6. Plant is located in State B, which under domestic law, considers that profits from trading permits fall under Article 6 (Immovable Property) and also under Article 13(1) (Capital Gains derived from alienation of immovable property). Because both State A and State B will tax the profits, but State B has -- at least subject to the issues relating to immovable property noted above -- taxed in accordance with the treaty (including its reference back to domestic law) State A, as residence State, must provide relief from double taxation under Article 23 through an exemption or credit.*

Example 2: *Plant owner is a resident of State B, which under domestic law, considers profits from permit trades as immovable property. Plant is located in State A, which considers profits from permits either Art. 7 (Business Profits) or Art. 13 (Capital Gains). Plant owner sells emissions permit, resulting in double non-taxation. Is this an appropriate result?*

Example 3: *Permit trader is a resident of State A, which classifies profits from trading permits as other income under Article 21. Trade takes place on an exchange in State B, which issued the permit originally. State B classifies trading profits as business profits under Article 7 or capital gains under Article 13. There is no permanent establishment for the permit trader in state B. As a result, there is double non-taxation. Is this an appropriate result?*

1.3.5 Article 12: Royalties

Because Article 12(3) in the UN Model defines royalties to include "payments . . . received . . . for the use of, or the right to use . . . industrial, commercial, or scientific equipment," there is a view that profits from emissions permit trades could potentially be classified as royalties under the UN Model Convention. Operation of certain industrial and commercial equipment results in greenhouse gas emissions, which requires a permit. A permit holder, regardless of how the permit is used, either as a trading or polluting instrument, has the right to emit a certain amount of CO_2. Thus, under this view the permit seller receives payments for the right to use industrial and commercial equipment and these profits might on this basis be classified as royalties. Under the UN Model Convention, such royalties may be taxed by the source State, up to a certain percentage as agreed in negotiations. How this view accords with Article 12's operation should be considered in more depth.

OECD Model Convention Differs. The OECD Model does not contain the "industrial, commercial or scientific equipment" clause; thus permit trading profits would not likely be considered royalties under the OECD Model. The OECD Model also does not provide for source country taxation of royalties, though many OECD countries have "Reservations" on the Model in that respect and follow an approach more aligned with the UN Model approach.

The potential relevance or otherwise of the Royalties Article under treaties following the UN Model deserves further study as to whether there is a consensus for one view or the other or, perhaps more likely, whether guidance is possible on when the Article may or may not apply, and the consequences of the views likely to be taken in practice, especially in terms of international double taxation or double non-taxation.

1.4 Emissions Permit Trading and the VAT

The UN Tax Committee has not in the past involved itself with indirect tax issues to any great extent, however, some of the major tax cooperation issues in this area of climate change relate to such taxes. In particular, emissions permit trading incurs a tax on the transaction in the form of a value added tax (VAT). Due to fluctuations in national VAT rates and depending on whether an emissions permit is classified as a good or a service, there are multiple tax rates that may apply to emissions permit trading. Further, some countries may exempt the transaction altogether from the VAT.

Variation calls for collaboration. In 2009, several European countries altered VAT treatment of emissions permit trading in response to Missing Trader Intra-Community fraud otherwise known as carousel fraud.[7] The U.K. revenue authorities applied a zero rating to any transaction in emissions allowances. From November 1, 2010, however, a 'reverse charge' will require the buyer of services (and not the seller) to pay the VAT and account for this payment and a standard rate will be applied to the transaction.[8] The Netherlands also applied a reverse charge mechanism to emissions allowances trading and France has exempted such trades from the VAT and treats them as securities transactions.[9] In Germany and Spain, the transfer of an emissions allowance is regarded as a transfer of other services, subject to VAT of 19% and 18%, respectively.[10]

As emissions allowances trading increases globally, VAT categorisations and rates may grow more diverse, resulting in considerable compliance burdens for business wishing to comply with tax obligations, but also offering opportunities for tax avoidance and evasion, arbitrage, and fraud. Collaboration and knowledge sharing between countries, then, becomes important to the viability of any emissions trading scheme. The Committee may wish at this stage to further consider the underlying issues in this area, or at least to be further advised on those issues. Even if this is not the case, sharing of knowledge and experiences between countries on these issues should be encouraged as a matter of urgency, including by other organisations and bodies active in this area.

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[7] Missing Trader Intra-Community (MTIC) occurs when a UK company purchases emissions permits outside of the country and then sells them to another UK company. The seller charges VAT but does not pay it to the UK authorities and then disappears. HM Revenue & Customs, Brief 46/09, *available at* http://www.hmrc.gov.uk/briefs/vat/brief4609.htm.

[8] HM Rev. & Customs, Brief 35/10, *available at* http://www.hmrc.gov.uk/briefs/vat/brief3510.htm; HM Rev. & Customs, Budget Note 49, VAT: Reverse Charge for Emissions Allowances, Mar. 24, 2010, available at http://www.hmrc.gov.uk/budget2010/march/bn49.pdf.

[9] Deloitte, Press Article: EU VAT Implications of the Emissions Allowance Trading and the Threat of Fraud (2009), *available at* http://www.deloitte.com/view/en_LU/lu/services/tax/indirect-taxes/vat-registration-duties/591dd9e807445210VgnVCM100000ba42f00aRCRD.htm.

[10] Michael Cashman, *Taxation and the Trading of Carbon Credits*, INT'L TAX REV. (June 2010), *available at* http://www.internationaltaxreview.com/includes/magazine/PRINT.asp?SID=725991&ISS=25619&PUBID=35.

1.5 Derivatives Based on Emissions Trading

How derivatives are used. The use of derivatives contracts such as options, swaps, and forwards and futures in relation to emissions permit trading has increased since the early price volatility in the carbon market. Using these financial instruments, permit traders can protect their investments from price uncertainty by entering into contracts that guarantee a certain permit price if the trader chooses (or is so obliged in the case of futures and forwards) to invest in emissions allowances. Traders can also swap some types of emissions permits for others, regardless of price movement. These financial instruments increase carbon market activity while providing price certainty for investors.

Theories of tax treatment. Although derivatives hedge against risk of price movement in the underlying financial instrument, for taxation purposes, derivatives are most often taxed as separate financial transactions.[11] Taxation of derivatives can be based on three different theories: 1) the decomposition principle where each transaction is taxed according to the character of the underlying instruments involved; 2) the separate transaction principle where each transaction is taxed as a separate financial instrument; and 3) the linked approach where the underlying financial instruments are grouped together to characterise the gain/loss from the entire transaction. Because most countries adhere to the second theory, these financial instruments are typically taxed as separate transactions under domestic corporate tax laws.[12]

Taxation based on the underlying property. Although derivatives may be taxed as separate transactions, there is some evidence of taxation based on the underlying property. For example, the U.S. taxes certain hedging transactions according to the character of the property being hedged: The profits from hedging transactions involving currency and property used for producing ordinary income are taxed as ordinary income.[13] Thus, a dealer in derivatives incurs taxable ordinary income through transaction profits which are produced in the ordinary course of business; while a mere investor would incur taxable capital gains income through transaction profits. Further, a corn syrup producer who enters into a futures contract for corn would incur taxable ordinary income because the hedging transaction involves property used for producing ordinary income. If applied to emissions trading, this legal framework may likely produce a similar result. The original emitter would incur taxable ordinary income on the sale of the emissions permit because the emission permit is property used for producing income in the ordinary course of business, while subsequent traders would incur taxable income based on the nature of the asset in their hands. This question, however, requires further analysis of the implications of differing domestic tax treatment of emissions trading derivatives within an international market.[14]

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[11] *See* Tax aspects of derivative financial instruments, Intl Fiscal Ass'n, Cahiers, vol. 80b (1995) (cited in Shefali Goradia, Taxation of Financial Derivatives, Nishith Desai Associates); *see also* Cashman, *supra*.

[12] *See id.*

[13] I.R.C. § 1221.

[14] Ernst & Young, Tax Aspects of Cap-and-Trade System Operation, *available at* http://www.ey.com/US/en/Industries/Oil---Gas/Carbon-market-readiness---9---Tax-aspects-of-cap-and-trade-system-operation (last visited Oct. 5, 2010).

1.6 Developing Country Challenges with ETS

> *Creating carbon markets and establishing a predictable carbon price will be part of the policy mix, but they do not address the development dimension of the challenge. For instance, the cap-and-trade system has been designed to conform to the policy experience, institutional capacity and economic conditions of rich countries. By default, this provides significant advantages to them, as the essential baseline is the current emissions of the high-emitting countries.*
>
> -- UNDESA, World Economic & Social Survey: Promoting Development, Saving the Planet 4 (2009).

The Capacity Challenge. Many countries currently lack the environmental and tax enforcement capacity to administer an emissions trading scheme. It is possible that this will be a factor for some developing countries in decisions on whether to take a carbon tax approach or a cap and trade approach. In order to set appropriate emissions reduction goals, environmental ministries must accurately assess current and estimate future emissions. Additionally, emission accounts and carbon inventories must be maintained and monitored for compliance, requiring a larger workforce. Further, financial markets and taxing authorities must also be sound in order to facilitate the trading of the permits. Judicial authorities must also be able to protect investors' property rights in the emissions permits. The institutional demands of maintaining an emissions trading scheme creates a great challenge for many developing countries.[15] Clearly, there are capacity development issues, as well as other aspects of this challenge which call for greater international tax cooperation on the tax aspects, including in assisting countries moving towards green economies.

The Future of ETS through the Clean Development Mechanism. Despite these capacity building challenges, developing countries will have a key role in emissions allowances trading as participants in the Clean Development Mechanism (CDM). CDM was instituted under the Kyoto Protocol, which allows industrialised countries with a greenhouse gas reduction commitment to invest in projects that reduce emissions in developing countries as an alternative to more expensive emissions reductions in their own countries. The applicants must prove that the planned reductions would not occur without the additional incentive provided by the emissions reductions credits. If the project is approved by the CDM Board and implemented, carbon credits are issued to the participants, who are free to sell the permits.[16] Developing host countries, then, already have an entrée into carbon markets, making emissions trading schemes a logical extension along the road of sustainable development. Here again, there will be tax consequences that will require the strengthened international tax cooperation called for in many recent high-level conferences, with developing country input reflecting the realities and priorities of such countries.

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[15] Joseph E Aldy, Eduardo Ley & Ian Parry, A Tax-Based Approach to Slowing Global Climate Change, Resources for the Future Discussion Paper No. DP-08-26 (2008).

[16] *See* Clean Development Mechanism Web site, http://cdm.unfccc.int/index.html.

Despite these developments, many developing and developed countries responding to climate change may prefer a carbon tax to a cap and trade system, for economic policy or administrability reasons, or for both. The tax cooperation issues that may arise are next considered.

2. Carbon Taxes

Costs and benefits. In comparison to an emissions trading scheme, a carbon tax is less complex for governments and provides more cost certainty for polluters. The government taxes polluters for each tonne of CO_2 emitted into the atmosphere. Thus, the polluter is motivated to lower CO_2 emissions to avoid the tax and can approximate costs and benefits with certainty. The tax is less complex for governments because many countries already have taxes on motor vehicles based on the emissions level, making the carbon tax a complement to other excise taxes already in place, even though determining carbon content for carbon tax purposes will not always be an easy task. Additionally, carbon taxes supply revenues--at least for an initial period until CO_2 emissions abate. The two major drawbacks of carbon taxes, however, are their potential unpopularity among the public and the uncertainty that a carbon tax will actually reduce CO_2 emissions. Although they have no direct relevance to tax treaty issues, carbon taxes present the opportunity for greater cooperation in their design and administration to minimise the costs of compliance and collection and avoid unintended instances of double taxation and double non-taxation.

2.1 Carbon Taxes in Environmental Fiscal Reform

Environmental fiscal reform uses taxation and other fiscal tools to raise revenue while benefitting the environment. For developed countries, carbon taxes can substitute other taxes, such as labour taxes, and improve economic conditions by reducing unemployment rates.[17] In developing countries, carbon taxes can raise revenue to finance poverty reduction measures such as infrastructure development and incentivise energy efficient industry. Environmental fiscal reform presents one opportunity for countries to collaborate to share specific successful tax strategies that mitigate climate change and encourage economic growth and development.

2.2 Border Tax Adjustments

Border Tax Adjustments. Just as with the corporate income tax, some countries will choose not to impose a tax on carbon emissions. Border tax adjustments can in theory serve as a remedy to differing tax regimes. When goods produced in the non-taxing country are imported into a taxing country, they have a potential competitive advantage over goods produced in taxed countries because of lower production costs (all other things being equal). A border tax adjustment would tax imports from non-carbon-taxing countries based on their carbon content. Further, a rebate for carbon taxes paid could be given when goods are exported to other countries with carbon taxes to avoid double taxation. The major challenge with border tax adjustments,

[17] *See* Stefan Speck, Possibilities of Environmental Fiscal Reform in Developing Countries, Paper presented at the Bank Indonesia Annual International Seminar, Aug. 1-2, (2008), *available at* http://www.bi.go.id/NR/rdonlyres/57BF6537-1BEA-4D42-B476-209DC56F11DA/14255/StefanSpeckdoc.pdf.

however, is determining the carbon content of imported goods. Home country comparisons of CO_2 emissions from the manufacture of similar goods are a start but production technology differs from country to country and some developing countries may not account for carbon emissions.[18] One detects here some of the sorts of issues dealt with under transfer pricing regimes as a search for "comparables".

Legal implications of border tax adjustments. There is also the legal issue of WTO and GATT compliance. Under these rules, there must be an equivalent tax on like products in the home country to maintain a tax on imports.[19] Whether a tax on carbon emissions from a production process can be construed as a tax on like products or whether the environmental exception[20] may apply to carbon border tax adjustments remains to be seen. Nevertheless, greater cooperate in relation to carbon tax regimes would hopefully reduce the opportunity for differences in this area, and for taxes to be applied in a protectionist way.

2.3 Addressing the Regressivity of Carbon Taxes

Although carbon taxes can be administered "upstream" at wellhead or refinery, for instance, in the case of petroleum products, the burden of this tax is ultimately passed down to the final consumer. Moreover, because both the poor and rich alike consume goods, such as gasoline, the poor must use more of their income to compensate for the higher price – a greater proportion of their income is spent on fuel. Thus, many economists have estimated that a "carbon tax is likely to be modestly to highly regressive."[21] This regressivity, however, can be minimised by using carbon tax revenues to replace or reduce other direct (and regressive) taxes[22] or using them to further poverty relief objectives.

2.4 An Emissions Tax on International Air Flights?

Fuel taxes. Although domestic flights are subject to a wide range of taxes, fuel taxes on international flights are rare due to the Convention on International Civil Aviation (Chicago Convention), which provides that fuel used on international flights must be exempt from taxes.[23] Further, because there are 188 signatories to the convention and over 1,500 other bilateral air service agreements, which contain reciprocal tax exemptions on fuel, fuel taxes on international flights are not a realistic possibility in the short-term.[24]

Other taxes. In addition to fuel taxes, there are other potential taxation opportunities on international flights in the form of trip and ticket taxes, and flight emissions can also be capped through emissions trading systems. Ad valorem ticket taxes (either the VAT or a non-creditable excise tax) on international travel are assessed by Argentina, Colombia, Mexico, Pakistan, Peru, Thailand, and Venezuela, while other high-income countries such as Australia, Germany, and

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[18] Gilbert Metcalf & David Weisbach, *Design of a Carbon Tax*, 33 HARV. ENVTL LAW REV. 499, 542-52 (2009).
[19] General Agreement on Tariffs and Trade, art. III, para. 2, Oct. 30, 1947, 61 Stat. A11, 55 U.N.T.S. 187.
[20] *See id.* at art. XX.
[21] *See, e.g.*, Metcalf & Weisbach, *supra*, at 513.
[22] *Id.*
[23] *Int'l* Civil Aviation Org. [ICAO], Convention on International Civil Aviation, art. 24, Dec. 7, 1944, T.I.A.S. No. 1591, 15 U.N.T.S. 295 (9th ed., ICAO Doc. 7300/9, 2006). *See also* Michael Keen & Jon Strand, *Indirect Taxes on International Aviation*, 28 Fiscal Stud. 1, 6-7 (2007).
[24] *See* Keen & Strand, *supra*, at 8-9.

Japan do not impose such taxes.[25] Trip taxes, usually in the form of departure taxes, however, are more common among developed and developing countries alike.[26]

If there were taxes specifically on the emissions of aircraft flying internationally, or indeed, other modes of transport, there might be similar issues of avoidance of double or multiple taxation as are dealt with under the Transport Articles of double tax treaties, but this does not appear to be a current issue.

2.5 Developing Country Issues

More than just a tax on carbon. For some developing countries that have more agricultural based economies, designing an effective carbon tax will involve more greenhouse gas emissions than just CO_2. Accurately measuring agricultural emissions such as N_2O and methane, however, is more difficult than the CO_2 emissions which dominate developing country greenhouse gas emissions.[27] Further, deforestation concerns will also figure prominently in the design of a carbon tax in developing countries.

3. Green Tax Incentives

3.1 The Cost Benefit Calculation

Any type of tax incentive involves the cost of forgoing revenues in order to reap greater benefits, either in the form of increased investments or gaining some other benefit such as new jobs or environmentally-friendly industry.[28] Accurately measuring these costs and benefits and monitoring incentive effectiveness is a challenge and requires information sharing and cooperation among countries. The issue of tax incentives is a separate agenda item for the sixth annual session, so this scoping paper only touches on some specific climate change related issues.

3.2 Policy Concerns for Climate Mitigation Investment

Although environmentally-friendly investments have grown over five-fold in the past five years, these investments should grow an additional twenty-fold in the building, transport, and industry sectors in order to effectively mitigate climate change.[29] The investment climate of the country is a crucial factor in encouraging and facilitating this investment and includes elements such as the "ease of import and export, availability of local suppliers, regulatory framework, adequate infrastructure, and the country's geographic location."[30] Collaboration between countries is

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[25] *See id.*

[26] *See id.* at tbl. 4-5.

[27] *See id.* at 503; Gilbert E. Metcalf & John M. Reilly, Policy Options for Controlling Greenhouse Gas Emissions: Implications for Agriculture, CHOICES 23 (2008).

[28] *See* The World Bank Group, Sebastian James, Tax and Non-Tax Incentives and Investments: Evidence and Policy Implications (2009).

[29] Nick Robins & Mark Fulton, Investment Opportunities and Catalysts: Analysis and Proposals from the Climate Finance Industry on Funding Climate Mitigation, in Climate Finance: Regulatory and Funding Strategies for Climate Change and Global Development 143 (Richard B. Stewart, Benedict Kingsbury & Bryce Rudyk eds. 2009).

[30] *See* James, *supra.*

needed to share effective strategies to increase regulatory certainty, increase local capacity to absorb carbon finance, and reduce investment risk.[31]

Conclusion.

This discussion has identified substantive tax issues in need of further study and clarification and has highlighted opportunities for tax cooperation to share effective tax responses to climate change and avoid unintended instances of double non-taxation and double taxation. Cooperation in this area could include involvement of organisations such as the UN, IMF, World Bank, OECD, WTO and regional tax administrations, as well as of initiatives such as the South-South Sharing of Successful Tax Practices (S4TP), in accordance with their respective memberships, mandates and priorities.

The secretariat proposes to continue to engage with these and other potential partners on environmental, especially carbon tax, cooperation issues and to report back to the Committee on developments and issues it may wish to consider. In particular, it proposes reporting more comprehensively on the tax treaty issues, including those identified in this note.

[31] *See* Robins & Fulton, *supra.*

APPENDIX 1 - TAX TREATMENT COMPARISON OF EMISSIONS RIGHTS IN CAP AND TRADE COUNTRIES

France	Emission rights qualify as intangible assets; valued at market value
Germany	emission rights qualify as intangible current assets; valued at lowest of cost or market value; penalties for shortfall are deductible
Netherlands	emission rights qualify as stock; valued at lowest of cost or market value; penalties are not deductible
Spain	Emission allowances treated as intangible asset; valued at market value or acquisition cost if purchased
Sweden	emission rights qualify as stock; valued at net sales value or at acquisition cost; penalties are not deductible

Anuschka Bakker ed., TAX AND THE ENVIRONMENT: A WORLD OF POSSIBILITIES 494 (2009); Michael Cashman, *Taxation and the Trading of Carbon Credits*, INT'L TAX REV. (June 2010), *available at* http://www.internationaltaxreview.com/includes/magazine/PRINT.asp?SID=725991&ISS=25619&PUBID=35

APPENDIX 2 - CARBON TAXES AROUND THE WORLD

Country/Province/Mun.	*Tax Name*	*Enactment*
Sweden	CO_2 levy on heating and process fuels	2008
Finland	Charge on exceeding of GHG emission limits	2004
Norway	CO_2-tax on mineral products	1991
	Environmental tax on greenhouse gases - HFC and PFC	2003
	Tax on CO_2 emissions in petroleum activities on the continental shelf	1991
Denmark	Duty on CO_2	1998
Quebec, Canada	Hydrocarbon Duty	2008
British Columbia, Canada	Carbon Tax	2008
City of Boulder, Colorado, USA	Carbon Tax	2006[32]
San Francisco Bay Area, California, USA	Carbon Tax on Businesses	2008[33]
Montgomery County, Maryland, USA	Carbon Tax on Stationary Sources	2010[34]

OECD/EEA Database on Instruments used for Environmental Policy and Natural Resources Management, available at http://www2.oecd.org/ecoinst/queries/index.htm.

[32] Press Release, City of Boulder, Colorado, Nov. 8, 2006, Boulder Voters Pass First Energy Tax in the Nation; Katie Kelly, City Approves 'Carbon Tax' in Effort to Reduce Gas Emissions, N.Y. TIMES, Nov. 16, 2006.

[33] Air Quality Board to Fine Bay Area Polluters, S.F. Chronicle, May 22, 2008 (reporting a carbon tax of 4.4 cents per ton of CO_2 which covers nine counties in San Francisco Bay Area).

[34] Hayley Peterson, Billion-dollar Power Company Sues Montgomery Over Carbon Tax, Washington Examiner, June 6, 2010 (reporting a county-wide carbon tax of $5 per ton of $CO_2$and the resulting litigation by an area power company).

APPENDIX 3 - GREEN TAX INCENTIVES AROUND THE WORLD

Country	*Favored Activity*	*Incentives*
Australia	Primary sector activities	Tax concessions for primary production business; deductions for capital expenditures relating to horticultural plants, waster facilities, timber depletion, and land care operations
	Investment in environmentally friendly equipment	Accelerated depreciation for assets used in carbon sink forests
	Engagement in environmentally friendly projects	R&D concessions and grants; Clean Business Australia grants; rebates supporting the installation of renewable energy water pump systems
	Investment in environmentally friendly projects	R&D concessions and grants; Clean Business Australia grants; rebates supporting the installation of renewable energy water pump systems
	Other Activities	Petroleum resource rent tax; deductible gift recipients; conservation agreements for transfer of land; mandatory renewable-energy target scheme; national greenhouse energy reporting
Brazil	Primary sector activities	Option to invest 10% of CIT due in environmentally friendly economic development in specific regions
	Other Activities	Tax incentives for technological innovation to promote investments in infrastructure sectors of transportation, harbors, energy, basic sanitation and irrigation
Canada	Engagement in environmentally friendly equipment	Accelerated depreciation for intangible expenditures related to renewable energy and energy conservation projects
	Investment in environmentally friendly projects	Incentive programs include Environmental Damages Fund, Federal Financial Assistance Programme for Environmental Technologies, Emerging Technologies Programme
China	Primary sector activities	Tax reduction and exemption treatments for agriculture, forestry, and fishing
	Investment in environmentally friendly equipment	Tax credit for purchases and use of certain equipment for environmental protection
	Engagement in environmentally friendly projects	3-year tax exemption + 3-year 50% reduction for certain environmental protection projects

	Special funds for environmental protection	Funds allocated for environmental protection and restoration are fully deductible
	Other Activities	10% tax reduction for income generated from products made with comprehensive resources
Germany	Primary sector activities	Allowance for certain capital gains derived from the sale of an agricultural or forestry enterprise; tax exemption for certain income derived from farming and forestry
	Other Activities	Fixed feed-in remuneration system for green power generators
India	Primary sector activities	Tax exemption for all agricultural activities; higher rate of depreciation for certain assets relating to environmental protection
	Investment in environmentally friendly equipment	Compensation from multilateral fund of Montreal Protocol; tax exemption for collecting and processing or treating of biodegradeable waste water; deduction of profits derived from infrastructure related to water and from biotechnology
	Other Activities	Tax holiday for industrial undertaking producing refined mineral oil; tax holiday for infrastructure project/power/housing; tax incentives for free-trade zone, special economic zone and 100% export-oriented units; tax incentives for units in specified states, undertakings engaged in export of handmade articles, or in the business of handling, storage and transportation of foodgrains
Japan	Primary sector activities	Special depreciation of eligible facilities
	Engagement in environmentally friendly projects	Deduction for replacing specified assets
	Other Activities	Special measure to allow forestation costs; tax credit on total R&D expenditures; tax measures for special non-profits
Netherlands	Primary sector activities	Tax exemption for forestry business income and capital gains on agricultural income; accelerated or free depreciation on many environmentally friendly assets
	Investment in environmentally friendly equipment	Allowance for investing in sustainable energy and certain types of energy-saving assets

	Special funds for environmental protection	Under certain condition a provision may be formed for costs related to voluntary sanitation of polluted soil
	Other Activities	Tax exemption for personal income derived from green investments; non-fiscal grant schemes
South Africa	Primary sector activities	Accelerated depreciation for environmental treatment and disposal assets, plants used for generation of electricity through natural resources and waste disposal assets; deduction for expenditure on assets related to prevention of soil erosion, construction of dams, irrigation plants, etc.
	Other Activities	Tax deduction for contributions to rehabilitation funds; tax exemption for rehabilitation fund income; tax exemption for NGOs that qualify as public benefit organisations; deduction for donations to PBOs
Spain	Primary sector activities	Accelerated depreciation of assets related to R&D; free depreciation of assets in qualifying mining projects
	Investment in environmentally friendly equipment	Tax credit for environment protection investments; tax credit for acquisition of vehicles and investments in renewable energies; tax incentive for woodland associations and forest farms
	Special funds for environmental protection	Exemption for obligations regarding environmental damage
	Other Activites	Tax credit for R&D
Sweden	Investment in environmentally friendly equipment	Deduction of expenses related to forest planting and ditching
	Special funds for environmental protection	Tax allocation reserves; future guarantee provision; replacement reserve; provision related to future treatment of burnt-out nuclear fuel and radioactive waste
	Other Activities	R&D expenses fully deductible; reduced property tax on wind parks
UK	Primary sector activities	Free depreciation on certain ships and certain allowances on expenditures by reference to the CO_2 emissions of cars
	Investment in environmentally friendly equipment	Capital allowance of 100% on specific categories of environmentally-friendly assets
	Engagement in environmentally friendly projects	Deduction for expenditures on the remediation of contaminated land or vacant business properties

USA	Primary sector activities	Certain payments received as compensation for converting erodible cropland to less intensive use are excluded from self-employment income; pollution control facility and qualified environmental remediation expenditures deductible; 50% additional depreciation for qualified cellulosic biofuel plant and recycling plant property; accelerated depreciation of qualified smart electric meter or grid systems; soil/water conservation for land used in farming; small business refiners; energy-efficient commercial building property; costs for qualified clean fuel vehicles deductible
	Investment in environmentally friendly equipment	Tax credits for environmentally-friendly vehicles, energy efficient homes and appliances, alcohol fuels, biodiesel fuels, low-sulphur diesel fuels, renewable electricity production, advanced nuclear power facility production, qualifying advanced coal project, qualifying gasification project, CO_2 sequestration
	Investment in environmentally friendly projects	Tax credit for clean renewable energy bonds
	Special funds for environmental protection	Deduction of payments made to the Nuclear Decommissioning Reserve Fund
	Other Activities	Exclusions from gross income for cost-sharing payments received under certain conservation programs, qualified transportation fringe benefits, subsidies for the purchase of energy conservation measure; extended carry-back for capital expenditures related to electric transmission and pollution control facilities or losses related to environmental liabilities

Adapted from Anuschka Bakker, ed., Tax and the Environment: A World of Possibilities at 490-95, 2009.