

# Designing a Destination-Based Carbon Tax

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# Outline

- **motivations**
- **experience with VAT**
- **lessons, challenges, and possible solutions for carbon taxation**



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# Motivations

- 1. Global increases in GHG emissions and atmospheric concentration of GHGs, and need to price emissions**
- 2. Shift in GHG emissions to developing countries and increasing trade in “embodied” GHG emissions**
- 3. Limited success with multilateral approaches as well as unilateral approaches**



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# Global GHG emissions

- **50% increase from 1990 to 2012, despite decreases in EU and transition economies**
- **CO<sub>2</sub> concentration 40% higher than pre-industrial times and exceeded 400 ppm in May 2013**
- **clear evidence of impact on climate (IPCC Report)**
- **urgent need to stabilize and reduce emissions to prevent average temperature increases beyond 2° C**
- **world's greatest market failure demands an effective price on emissions (Stern Report)**



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# Shift to developing countries and emissions embodied in trade

- **stabilization and decreases in GHG emissions in developed countries (EU, Japan, US, Canada, Australia)**
- **substantial increases in GHG emissions in developing countries (China, India, Brazil, “Asian Tigers”)**
- **growing share of emissions embodied in traded goods and services: from 20% in 1990 to 26% in 2008**
- **substantial and increasing net import of embodied carbon by developed countries from developing countries (evidence of “weak carbon leakage”)**



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# Limited success of multilateral approaches

- **UN Framework Convention on Climate Change**
  - only 12% of global emissions covered in second commitment period
- **European Union Emissions Trading System (EU ETS)**
  - only 50% of emissions covered
  - free allowances for trade-exposed industries
  - surplus permits and depressed prices (US\$5-7/tCO<sub>2</sub>)
- **Western Climate Initiative (WCI)**
  - implemented only in California and Quebec
  - prices relatively low (US\$10-12/tCO<sub>2</sub>)



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# Limited success of unilateral approaches

- **Emissions trading schemes**
  - domestic schemes generally not linked to other schemes
  - free allocations for trade-exposed industries common
  - prices generally low, ranging from US\$2-3/tCO<sub>2</sub> in New Zealand to US\$2-3/tCO<sub>2</sub> in Shenzhen
  - although prices reached US\$22/tCO<sub>2</sub> in Australia, a new government repealed the Carbon Pricing Mechanism
- **Carbon taxes**
  - rates generally higher than cap and trade prices, ranging from US\$28/tCO<sub>2</sub> in Ireland and British Columbia to US\$164/tCO<sub>2</sub> in Sweden
  - BUT higher rate taxes tend to provide relief to energy-intensive and trade-exposed industries



# International experience with VAT

- **first adopted in 1954 in France**
- **now levied in over 150 countries (almost all but U.S.)**
  - **1960s-1970s: Eu15 and Latin America**
  - **1980s-1990s: Central Europe, former Soviet Union, Asia, Africa, Caribbean, New Zealand, Japan, Canada, Switzerland**
  - **2000s: Australia, India**
- **required by EU and advocated by IMF, but spread around world otherwise uncoordinated**
- **proven success as relatively neutral, efficient and effective source of revenue (12-30%)**



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# Key design features of most VATs

- **credit/invoice method**
- **destination basis (with border tax adjustments)**
  - **tax applied to imports**
  - **exports “zero-rated” (fully exempt from tax)**
- **thresholds and exemptions**
  - **threshold for small suppliers (tax on inputs)**
  - **exemptions for agricultural, financial, non-profit and public sectors (tax on inputs)**
  - **zero-rating for specific categories of sales (fully exempt)**



# Key insights for design of a domestic carbon tax

- **if applied on a destination-basis, with imports subject to the tax and exports zero-rated, a domestic carbon tax could address concerns about competitiveness and carbon leakage, making it possible for countries to adopt and maintain high-rate carbon taxes without any need for a multilateral agreement and without special exemptions for trade-exposed industries.**
- **a destination-based carbon tax would also recognize carbon emissions embodied in traded goods and services, making consumers ultimately responsible for the environmental cost of emissions associated with the goods and services that they purchase.**



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# Key challenges for a destination-based carbon tax

- 1. administrative feasibility**
- 2. compatibility with international trade law**



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# Key administrative challenges

- 1. computing emissions embodied in goods and services**
- 2. assessing tax on imported goods and services**



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# Computing embodied emissions - 1

- **initially, as with existing carbon taxes, emissions would presumably be based on the carbon content of fossil fuels that are purchased and consumed**
- **for producers, the carbon taxes paid in any period would (like other inventory costs) have to be allocated to specific goods and services that are sold to downstream producers or consumers**
- **for this purpose, accounting standards would need to be devised, but could be based on carbon footprint guidelines developed by the International Organization for Standardization (ISO 14067) and generally accepted management accounting standards for emissions allocation**



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# Computing embodied emissions - 2

- **once carbon taxes are allocated to specific goods and services, it is possible for upstream producers to invoice purchasers (downstream producers and consumers) for carbon taxes that they have paid on fossil fuels used to produce these goods or services**
- **since producers will invariably acquire other goods and services in addition to fossil fuels in order to produce goods and services, it also follows that producers will be required to pay carbon taxes on the acquisition of these intermediate goods and services to the extent that carbon taxes paid by upstream producers were allocated to these goods and services**



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# Computing embodied emissions - 3

- **it also follows that producers who are required to pay carbon taxes on the acquisition of intermediate goods and services should be able to invoice purchasers for these indirect or embedded carbon taxes as well as carbon taxes that they themselves pay for fossil fuels**
- **as with the allocation of direct carbon taxes to specific goods and services, accounting standards would need to be devised to allocate indirect carbon taxes on business inputs to specific goods and services that are sold to downstream producers or consumers**
- **this task could be challenging in some cases (e.g., the allocation of carbon taxes on capital equipment) but relatively easy in others (e.g., carbon taxes on inputs that are physically incorporated into another product).**



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# Computing embodied emissions - 4

- **as a result, while producers are required to pay carbon taxes for fossil fuels as well as intermediate goods and services in the production of which carbon taxes have been paid by upstream producers, these taxes are effectively refunded when they invoice purchasers for these embedded taxes (much like a credit/invoice system in a VAT)**
- **in this way, a cumulative carbon tax is passed through the chain of production and ultimately paid by the end consumer**
- **where the good or service is exported, however, a destination-based carbon tax would “zero-rate” the export, refunding direct and indirect carbon taxes to the exporter based on amounts invoiced.**



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# Computing embodied emissions - 5

- **although life-cycle accounting of the carbon footprints of specific goods and services can be costly, the “credit/invoice” method of collecting and effectively refunding tax at each stage of the production process is similar to inventory accounting, and should be manageable once accounting standards are devised (and ideally made widely available through computer software)**
- **to the extent that compliance costs are considered too high for certain sectors or small enterprises, they could be exempted from collecting carbon taxes on sales of goods and services (while remaining subject to tax on fossil fuels and other business inputs)**
- **exemption might be appropriate for small retailers, but not for export industries, since taxes would not be refunded.**



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# Assessing tax on imported goods and services

- **subject to fraudulent reporting or accounting allocations, a “credit/invoice” method of collecting a destination-based carbon tax ensures that the appropriate amount of tax is collected on domestically-produced goods and services based on cumulative carbon emissions associated with their production**
- **absent a similar tax regime for imported goods and services, or certified information on their carbon footprints, it is impossible to apply a tax on imports based on embedded carbon emissions**
- **in these circumstances, it will be necessary to rely on presumptions leaving it to importers to demonstrate that actual emissions were less (however, this has implications for trade law)**



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# International trade law - exports

- **zero-rating should not be regarded as an export subsidy against which anti-dumping or countervailing duties can be imposed: GATT Article VI:4, *Ad Note* to Article XIV, and Footnote 1 to the Agreement on Subsidies and Countervailing Measures**
- **depends on conclusion that the carbon tax is an indirect tax levied on the product rather than the producer, which should be easy to establish with a “credit/invoice” method of collection which effectively passes the tax through the production chain so that it is ultimately paid by the end consumer**
- **also depends on conclusion that a “like product” destined for domestic consumption contains the same embedded carbon emissions as the exported product**



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# International trade law - imports

- **tax on imported goods based on carbon footprints complies with destination principle in Article II:2 and Article III**
- **depends on conclusion that the BTA is either an internal tax (Article III:2) or equivalent to an internal tax (Article II:2) that applies to imported products not producers**
- **also depends on conclusion that a “like domestic product” has the same carbon footprint as the imported product**
- **further requires that the BTA is not applied “so as to afford protection to domestic production” (Article III:1)**
- **easier to establish with actual carbon footprints than presumed carbon footprints, unless based on predominant domestic production (as with *Superfund* legislation)**



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# International trade law - imports

- **blanket exemption for imports from countries with carbon pricing would violate most-favoured nation principle in Article I**
- **double tax conventions might be used to relieve taxes on imports from countries with carbon pricing, but this would also likely violate Article I**
- **as a result, a destination-based carbon tax encourages other countries to adopt destination-based carbon taxes in order to rebate carbon taxes and charges on exports (as with the VAT)**



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# International trade law – Article

## XX

- carbon taxes or tariffs on imported goods could also be justified under Article XX(g) on the basis that the earth's atmosphere is an "exhaustible natural resource", that the domestic carbon tax relates to the conservation of the earth's atmosphere (*US – Shrimp*), and that the tariff is "made effective in conjunction with restrictions on domestic production and consumption"
- in addition, however, the tariff would also have to satisfy the introductory language of Article XX, requiring that the measure not be "applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade"



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# International trade law – Article

## XX

- to ensure that a tariff does not constitute a “means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail” decisions of the Appellate Body suggest that the tariff should recognize comparable policies in different countries and different conditions in different countries, and should not be adopted without “serious across-the-board negotiations with the objective of concluding bilateral or multilateral agreements” (*US - Shrimp*)
- these requirements would make a carbon tariff more difficult to establish and administer than a BTA which could be introduced without the need for bilateral or multilateral negotiation and would apply equally to all products based on their carbon footprints, regardless of their origin



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# Conclusions

- 1. Multilateral and unilateral approaches to carbon pricing have had limited success and do not recognize emissions embodied in international trade**
- 2. VATs provide a valuable example of a unilateral tax measure on which a carbon tax might be based**
- 3. Despite significant administrative challenges and issues regarding compatibility with international trade law, the prospects for a destination-based carbon tax to encourage more effective carbon pricing suggest that it is worth considering**



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