



Climate Change: EU and Proposed U.S. Approaches to Carbon Leakage and WTO Implications

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Summary

The United States has proposed, and the European Union (EU) developed, policies to mitigate the potential economic and environmental (i.e., “carbon leakage”) impacts of carbon policies on energy- or greenhouse gas-intensive, trade-exposed industries. While studies have found little effect of carbon policies on EU competitiveness in the present, the EU decision to move toward auctioning of allowances in the future has spurred development of criteria to extend potential availability of free allowances to exposed industries to 2020. In a December 2009 decision, the European Commission (EC) listed 164 industrial sectors and subsectors deemed exposed sectors under appropriate European Parliament and Council directives.

H.R. 2454, which passed the House on June 26, 2009, includes two strategies to address these concerns: (1) free allocation of allowances (similar to that of the EU), and (2) an international reserve allowance (IRA) scheme. Studies have suggested that a free allowance scheme appears effective in mitigating the trade-related impact of the carbon program on energy-intensive, trade-exposed industries. However, production cost for those industries (along with other industries) could increase because of the potential pass-through of compliance-related costs by upstream producers of various inputs into their manufacturing processes. Whether these costs would become significant would depend on the ability of upstream suppliers to pass on the costs, and the ability of the downstream industries to respond by increasing the efficiency of their operations or by substituting other, less-costly inputs into their processes. There are questions about whether the allowances provided by H.R. 2454’s allocation scheme are sufficient. If the Environmental Protection Agency’s estimates are correct, the allocation would appear sufficient. If industry estimates are correct, or if individual showings of eligibility prove significant, the pool of allowances provided by the bill would appear inadequate under the assumptions used here. Also, the data and administrative resources necessary to implement the program would be substantial.

Although H.R. 2454 as passed would require EPA to establish an IRA program consistent with U.S. international agreements, questions may be raised as to whether proposed Part IV and its application would fully comply with U.S. international trade obligations. The distribution of free allowances may constitute actionable subsidies for purposes of the World Trade Organization (WTO) Agreement on Subsidies and Countervailing Measures by possibly qualifying as “foregone revenue” when auctioning of allowances would also be permitted. In addition, the requirement that importers purchase IRAs to accompany particular imports might be found to constitute a prohibited import surcharge or, if the product may not otherwise enter the United States, a prohibited quantitative restriction under the General Agreement on Tariffs and Trade (GATT) 1994. While the IRA program might be provisionally justified under GATT general exceptions for health protection or resource conservation, the GATT also requires that it not be applied “in a manner that would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade.” Whether an IRA program can be applied consistently with these requirements may depend on the type of program that may be crafted by EPA under the proposed legislation—that is, on the elements that would be required under the bill and the administrative possibilities inherent in its discretionary authorities. Absent an international consensus on the types of trade-related measures that may be applied as part of a domestic climate change regime, adversely affected countries may seek to challenge these measures under WTO dispute settlement provisions. Since neither the distribution of emission allowances nor border restrictions imposed as part of a domestic greenhouse gas-reduction program have yet come before WTO dispute settlement panels, WTO obligations and exceptions remain untested in this complex regulatory environment.

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Introduction

Congress is considering legislation to reduce emissions of greenhouse gases that may, depending on the specifics of the final legislation, affect the competitiveness of energy- or greenhouse gas-intensive industries. Competitiveness can be a rather abstract term for which any precise meaning can be elusive.¹ Competitiveness is a continuing phenomenon, with companies becoming more or less competitive according to a host of factors, including productivity, market demand, resource costs, labor costs, exchange rates, and the like. As stated by the Australian Government in its Green Paper on carbon reduction schemes:

Changes in the cost structures of entities and industries are not unusual and occur continuously in a market-based economy; nor is it unusual for Government policy to change cost structures. For example, the adoption of high quality occupational health and safety standards have affected the profitability of Australia's labour-intensive traded industries, making it more difficult for them to compete with foreign producers that are subject to lower standards. Assistance is not usually provided to offset the impact of domestic policies on traded industries, as those policies reflect the priorities and values of the Government and community more generally.²

Most industries face a competitive market (sometimes international in scope) both in terms of producers of the same products and producers of substitute products. Also, in some cases, an industry may face a fairly elastic demand for its product. Thus, most industries are price sensitive, and therefore any increase in manufacturing costs—as by a carbon emission reduction requirement—hurts the competitiveness of a firm. This complex situation is further complicated for energy-intensive industries as competitors within the same industry may experience different energy price increases (particularly for electric power), depending on their individual energy needs and power arrangements. For example, an aluminum plant receiving power from a hydroelectric facility may not be affected the same way as a similar plant whose power contract is with a coal-fired power supplier.

The addition of a carbon control regime to this competitive dynamic has raised concerns that, in the absence of similar policies among competing nations, if the United States adopts a carbon control policy, energy- or greenhouse gas-intensive, trade-exposed industries that must control their emissions or that find their feedstock or energy bills rising because of costs passed-through by suppliers may be less competitive and may lose global market share (and jobs) to competitors in countries lacking comparable carbon policies. In addition, this potential shift in production could result in some of the U.S. carbon reductions being undercut by increased production in less regulated countries; this is commonly known as “carbon leakage.”

Greenhouse gas reduction legislation introduced over the last two Congresses has included provisions to address carbon leakage and to mitigate the effect of carbon policies on U.S. competitiveness. In general, two strategies have been proposed: (1) providing assistance to greenhouse gas-intensive, trade-exposed industries; and (2) imposing tariffs on certain greenhouse gas-intensive goods imported into the country from countries not implementing

¹ For a further discussion, see CRS Report R40100, “*Carbon Leakage*” and Trade: Issues and Approaches, by Larry Parker and John Blodgett.

² Department of Climate Change, Commonwealth of Australia, *Carbon Pollution Reduction Scheme: Green Paper* (July 2008), p. 292.

comparable carbon policies. Such tariffs are frequently referred to as border measures. H.R. 2454, as passed by the House, contains both of these strategies.³

This report examines the dynamics of this issue in three parts. First, the European Union (EU) has been implementing a cap-and-trade program for four years, and has finalized a third reduction phase that will run from 2013 through 2020.⁴ This report reviews and analyzes the experience of the EU in addressing its concerns about energy-intensive, trade-exposed industries, and the lessons those efforts may have for the United States. Second, the House-passed American Clean Energy and Security Act of 2009 (H.R. 2454) contains both a free allocation scheme and a border measure among its provisions to address the concerns of energy-intensive, trade-exposed industries. This report reviews and analyzes these provisions. Third, these same provisions could come under scrutiny under various U.S. trade agreements, particularly within the World Trade Organization (WTO). Concerns have been expressed that the border measure contained in H.R. 2454 would be suspect under various provisions of the WTO. This report analyzes the potential WTO implications of any attempt to implement a subsidy or a border measure under H.R. 2454.

Using Free Allocations under the EU-ETS: Results and Lessons Learned

Background on the European Union's Emissions Trading Scheme (ETS)

The EU's Emissions Trading System (ETS) covers more than 10,000 energy-intensive facilities across the 27 EU Member countries, including oil refineries, powerplants over 20 megawatts (MW) in capacity, coke ovens, and iron and steel plants, along with cement, glass, lime, brick, ceramics, and pulp and paper installations. In addition, aviation is currently being phased into the ETS. These covered entities emit about 40%-45% of the EU's total greenhouse gas emissions, and almost two-thirds of them are combustion installations. The trading program does not cover either carbon dioxide (CO₂) emissions from the transportation sector (except aviation), which account for about 25% of the EU's total greenhouse gas emissions, or emissions of non-CO₂ greenhouse gases, which account for about 20% of the EU's total greenhouse gas emissions. A Phase 1 trading period ran between January 1, 2005, and December 31, 2007.⁵ A Phase 2 trading period began January 1, 2008, covering the period of the Kyoto Protocol, and a Phase 3 has been finalized to begin in 2013.⁶

Under the Kyoto Protocol, the then-existing 15 nations of the EU agreed to reduce their aggregate annual average emissions for 2008-2012 by 8% from the Protocol's baseline level (mostly 1990

³ For more information on trade and carbon leakage issues, see CRS Report R40100, *"Carbon Leakage" and Trade: Issues and Approaches*, by Larry Parker and John Blodgett.

⁴ For further background on Phase 3 of the ETS, see CRS Report R41049, *Climate Change and the EU Emissions Trading Scheme (ETS): Looking to 2020*, by Larry Parker

⁵ For further background on the ETS, see CRS Report RL34150, *Climate Change and the EU Emissions Trading Scheme (ETS): Kyoto and Beyond*, by Larry Parker.

⁶ More information, including relevant directives, on the EU-ETS is available on the European Union's website at <http://europa.eu.int/scadplus/leg/en/lvb/l28012.htm>.

levels) under a collective arrangement called a “bubble.” In light of the Kyoto Protocol targets, the EU adopted a directive establishing the EU-ETS that entered into force October 13, 2003.⁷ One objective of the second phase of the ETS is to achieve 3.3 percentage points of the 8.0% reduction required by the EU-15 under the Protocol.⁸

The importance of emissions trading was elevated by the accession of 12 additional central and eastern European countries to EU membership from May 2004 through January 2007. For the new EU-27, the overall ETS emissions cap is set at 2.08 billion metric tons of carbon dioxide (CO₂) annually for the Kyoto compliance period (2008-2012).

The second phase Kyoto compliance stage of the ETS is built on the experience the EU gained from its preliminary Phase 1. The European Commission (EC) believes that the Phase 1 “learning by doing” exercise prepared the community for the difficult task of achieving the reduction requirements of the Kyoto Protocol. Several positive results from the Phase 1 experience assisted the ETS in making the Phase 2 process run smoothly, at least so far. First, Phase 1 established much of the critical infrastructure necessary for a functional emission market, including emissions monitoring, registries, and inventories. Much of the publicized difficulties the ETS experienced early in the first phase can be traced to inadequate emissions data infrastructure.⁹ Phase 1 significantly improved those critical elements in preparation for Phase 2 implementation.

Second, the ETS helped jump-start the project-based mechanisms—Clean Development Mechanism (CDM) and Joint Implementation (JI)—created under the Kyoto Protocol.¹⁰ As stated by Ellerman and Buchner:

The access to external credits provided by the Linking Directive has had an invigorating effect on the CDM and more generally on CO₂ reduction projects in developing countries, especially in China and India, the two major countries that will eventually have to become part of a global climate regime if there is to be one.¹¹

Third, according to the EC, a key result of Phase 1 was its effect on corporate behavior. An EC survey of stakeholders indicated that many participants are incorporating the value of allowances in making decisions, particularly in the electric utility sector, where 70% of firms stated they were pricing the value of allowances into their daily operations, and 87% into future marginal pricing decisions. All industries stated that it was a factor in long-term decision-making.¹²

⁷ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading within the Community and amending Council Directive 96/61/EC.

⁸ Commission of the European Communities, *Communication from the Commission: Progress towards Achieving the Kyoto Objectives* (November 19, 2008).

⁹ A. Denny Ellerman and Barbara K. Buchner, “The European Union Emissions Trading Scheme: Origins, Allocations, and Early Results,” *Environmental Economics and Policy* (Winter 2007), pp. 69-70; and International Emissions Trading Association, “IETA Position Paper on EU ETS Market Functioning,” (no date), p. 3.

¹⁰ For more on the effect of the ETS on Kyoto mechanisms, see A. Denny Ellerman and Barbara K. Buchner, “The European Union Emissions Trading Scheme: Origins, Allocations, and Early Results,” *Environmental Economics and Policy* (Winter 2007), p. 84; and International Emissions Trading Association, “IETA Position Paper on EU ETS Market Functioning” (no date), p. 2. For more information on the Kyoto Protocol mechanisms, see CRS Report RL33826, *Climate Change: The Kyoto Protocol, Bali “Action Plan,” and International Actions*, by Jane A. Leggett.

¹¹ A. Denny Ellerman and Barbara K. Buchner, “The European Union Emissions Trading Scheme: Origins, Allocations, and Early Results,” *Environmental Economics and Policy* (Winter 2007), p. 84.

¹² European Commission, Directorate General for Environment, *Review of EU Emissions Trading Scheme: Survey Highlights*, (November 2005), pp. 5-7.

European Energy-Intensive, Trade-Exposed Industries

Background

Figure 1 below indicates the cost sensitivity of various manufacturing activities in the United Kingdom as determined by Climate Strategies.¹³ Cost sensitivity is measured as the percentage of the activity's current gross value added at stake from a 20 euro per metric ton carbon price.¹⁴ As indicated by the **bold**, several of these industries are covered by the ETS, including lime, cement, basic iron and steel, refined petroleum products, pulp, paper and paperboard, hollow glass, and flat glass. The figure also indicates the direct and indirect cost components of implementing a carbon pricing policy. The cost impact of a 20 euro carbon price from a manufacturing process from direct emissions is indicated by the light blue versus the cost impact of indirect emissions resulting from higher electricity prices, which is indicated by the dark blue. As shown, the balance of direct and indirect costs differs substantially among the various sectors.

¹³ As published in Carbon Trust, *EU ETS Impacts on Profitability and Trade* (January 2008), p. 3.

¹⁴ The Value at Stake can be defined as the difference in costs between "business as usual" and reduced emissions scenarios (based both on the impact of increasing energy process and the potential for reducing consumption). This calculation includes both direct and indirect costs.

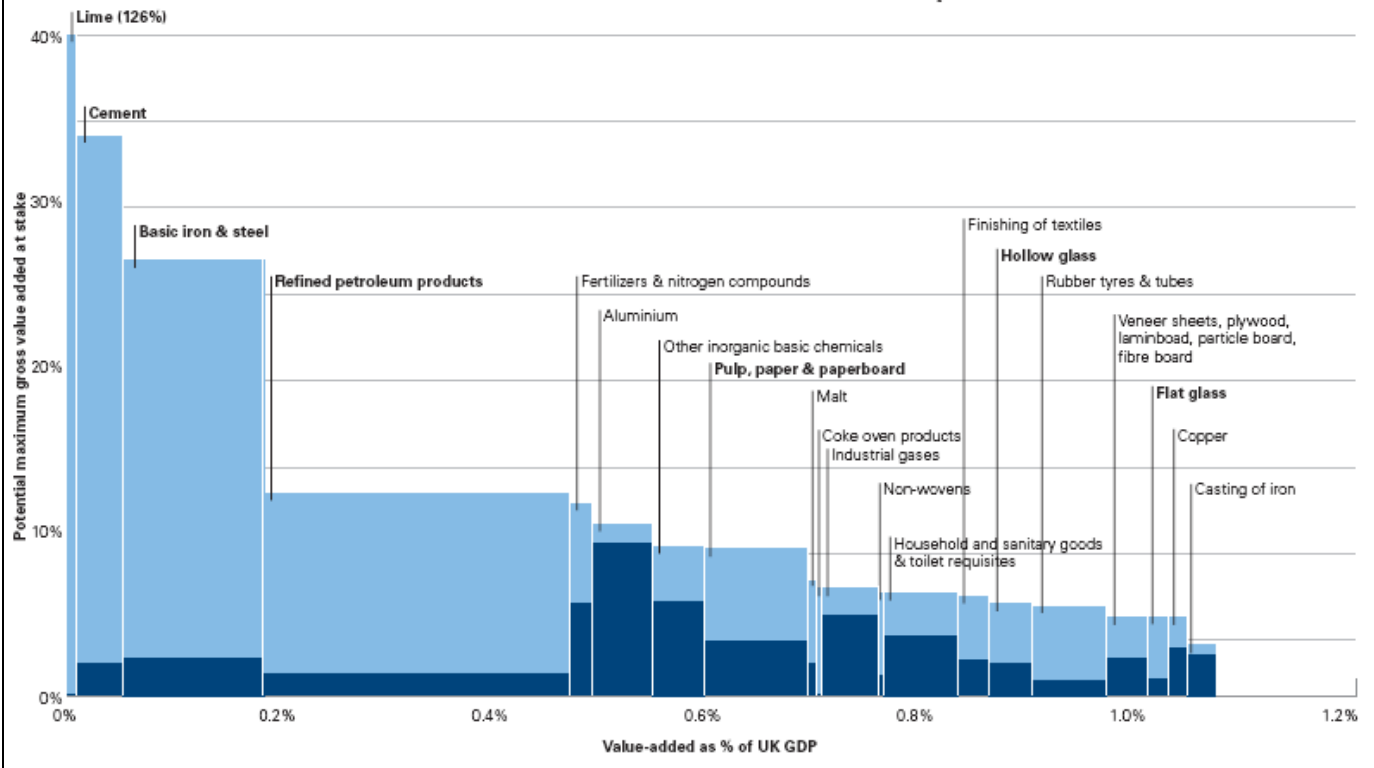
Figure I. UK Manufacturing Activities Most Cost-sensitive to CO₂ Pricing

The vertical axis shows the cost increase brought about by paying the full cost of CO₂ at €20/t CO₂ as a percentage of the activity's current value added. The horizontal axis indicates the scale of the activity's contribution to the UK's GDP. The area of each column is proportional to total CO₂ emissions. The **dark blue** bars show the cost of carbon that will be paid through higher electricity prices (equivalent to €10/MWh at €20/t CO₂).

The **light blue** bars show the cost due to the carbon emitted through direct fossil fuel consumption and manufacturing processes. Activities labelled in **bold** are in sectors that already participate in Phase II of the EU ETS. Some combustion facilities in other sectors may also be participating, and more sectors will be added in Phase III. Definitions of value-added and numbers for each activity are in the Annex of this report.

Source: Climate Strategies (2007): Hourcade, Neuhoﬀ, et al.

Allocation dependent (direct) CO₂ costs/GVA
Electricity (indirect) CO₂ costs/GVA



Source: Carbon Trust, *EU ETS Impacts on Profitability and Trade* (January 2008), Based on data in Climate Strategies (2007).

Notes: Annex referenced in Figure I can be found on page 32 of source report.

EC Phase 3 Decision on Eligible Industries

After nine eastern European Member States threatened to veto an initial proposal to auction 100% of all allowances, the leaders of the European Union (EU) agreed to provide for some free allocation of allowances during Phase 3 that will begin in 2013.¹⁵ In making changes for Phase 3, the European Commission has identified three CO₂ emitting sectors for inclusion under the ETS: petrochemicals, ammonia, and aluminum.¹⁶ The ETS would also expand beyond CO₂ to include

¹⁵ See European Commission, *Directive 2009/29/EC of the European and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community* (Brussels, April 23, 2009).

¹⁶ European Commission, *Directive 2009/29/EC of the European and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community* (Brussels, April 23, 2009), annex I.

nitrous oxide (N₂O) emissions from nitric, adipic, and glyoxalic acid production, and perfluorocarbon (PFC) emissions from the aluminum sector. These industries would be added to those currently covered: oil refineries, powerplants over 20 MW in capacity, coke ovens, and iron and steel plants, along with cement, glass, lime, brick, ceramics, and pulp and paper installations (aviation is currently being incorporated into the system).

Most covered industries, except for electric powerplants, will be eligible for some free allocation of allowances to cover direct emissions under the Phase 3 agreement. For electric powerplants, most will receive no free allocation of allowances during Phase 3. However, in a concession to certain eastern European Member States, an optional and temporary derogation from the no-free-allocation requirement for powerplants is provided to countries that meet specific energy and economic criteria. Under the optional allocation scheme, the Member State can allocate allowances equal to 70% of the powerplant's Phase 1 emissions free; this allocation will decline in the out-years.

The auction schedule for most other covered entities is more gradual with 80% of a sector's allocation provided free in 2013, declining linearly to 30% by 2020, and zero by 2027. As stated in the final EC directive:

For other sectors covered by the Community scheme, a transitional system should be foreseen for which free allocation in 2013 would be 80% of the amount that corresponded to the percentage of the overall Community-wide emissions throughout the period 2005 to 2007 that those installations emitted as a proportion of the annual Community-wide total quantity of allowances. Thereafter, the free allocation should decrease each year by equal amounts resulting in 30% free allocation in 2020, with a view to reaching no free allocation in 2027.¹⁷

For energy-intensive, trade-exposed industries, Phase 3 has provisions to provide assistance to eligible installations to address the direct and indirect impact of emissions control costs. With respect to direct emissions costs, the EC published a list of installations exposed to a significant risk of carbon leakage on December 24, 2009.¹⁸ The list is identical to the draft list released in September 2009.¹⁹ The decision lists 164 industrial sectors and subsectors deemed exposed sectors under the appropriate European Parliament (EP) and Council directives. That list is provided in the **Appendix**. Eligible installations will receive allowances sufficient to cover 100% of their direct emissions, provided they are using the most efficient technology available. Reflecting the fluid nature of the competitive situation and international negotiations, the EC is to review its decision by June 30, 2010, and provide the EP and Council with any appropriate proposals to respond to the situation.

Assistance for the impact of indirect emissions control costs on exposed industries would be determined by Member States. As stated in the final directive:

¹⁷ European Commission, *Directive 2009/29/EC of the European and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community* (Brussels, April 23, 2009), paragraph 21.

¹⁸ European Commission, *Commission Decision of 24 December 2009 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage* (Brussels, 2009).

¹⁹ European Commission, *Draft Commission Decision of 18 September 2009 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage* (Brussels, 2009).

Member States may deem it necessary to compensate temporarily certain installations which have been determined to be exposed to a significant risk of carbon leakage related to greenhouse gas emissions passed on in electricity prices for these costs. Such support should only be granted where it is necessary and proportionate and should ensure that the Community scheme incentives to save energy and to stimulate a shift in demand from grey to green electricity are maintained.²⁰

Analysis of EU Approach

Effectiveness of Phase 1 Free Allowance Allocations

In general, allowances have been allocated free to participating entities under the ETS. During Phase 1, the EU-ETS Directive allowed countries to auction up to 5% of allowance allocations, rising to 10% under Phase 2.²¹ Under Phase 1, only four of 25 countries used auctions at all, and only Denmark auctioned the full 5%. The political difficulty in instituting significant auctioning into ETS allowance allocations is the almost universal agreement by covered entities in favor of free allocation of allowances and opposition to auctions.²² Free allocation of allowances represents a one-time transfer of wealth to the entities receiving them from the government issuing them.²³ The resulting transfer of wealth has been described by several analysts as “windfall profits.”²⁴ As summarized by Ellerman and Buchner: “Allocation in the EU-ETS provides one more example that, notwithstanding the advice of economists, the free allocation of allowances is not to be easily set aside.”²⁵

Despite concerns about windfall profits and economic distortions resulting from the free allocation of allowances, there is little change in basic allocation philosophy for Phase 2. No country proposed auctioning the maximum percentage of allowances allowed (10%). Most do not include auctions at all.²⁶ The unwillingness of governments to employ auctions as an allocating mechanism revolves around equity considerations, including (1) the inability of some covered entities to pass through cost because of regulation or exposure to international competition; (2) the potential drag on a sector’s economic performance from the up-front cost of auctioned

²⁰ European Commission, *Directive 2009/29/EC of the European and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community* (Brussels, April 23, 2009), paragraph 27.

²¹ For a further discussion of auctioning and the ETS, see Cameron Hepburn et. al., “Auctioning of EU ETS phase II allowances: how and why?” *Climate Policy* (2006), pp. 137-160.

²² A. Denny Ellerman and Barbara K. Buchner, “The European Union Emissions Trading Scheme: Origins, Allocations, and Early Results,” *Environmental Economics and Policy* (Winter 2007), p. 73.

²³ Joseph Kruger, Wallace E. Oates, and William A. Pizer, “Decentralization in the EU Emissions Trading Scheme and Lessons for Global Policy,” *Environmental Economics and Policy* (Winter 2007), p. 114.

²⁴ E.g., Deutsche Bank Research, *EU Emission Trading: Allocation Battles Intensifying* (March 6, 2007), pp. 2-3; and Regina Betz and Misato Sato, “Emissions Trading: Lessons Learnt from the 1st Phase of the EU ETS and Prospects for the 2nd Phase,” *Climate Policy* (2006), p. 353.

²⁵ A. Denny Ellerman and Barbara K. Buchner, “The European Union Emissions Trading Scheme: Origins, Allocations, and Early Results,” *Environmental Economics and Policy* (Winter 2007), p. 85.

²⁶ For a review of proposed NAP 2 auction proposals as of January 12, 2007, see Karsten Neuhoff, *EU ETS Auction Workshop*, (Cambridge, January 12, 2007), p. 26. NAP refers to the National Allocation Plans member countries submitted to the European Commission during Phase 1 and Phase 2 to demonstrate how they were going to meet their emissions target.

allowances; and (3) the potential that government will not recycle revenues to alleviate compliance costs, international competitiveness impacts, or other equity concerns, resulting in the auction costs being the same as a tax.²⁷

Most studies of the competitiveness impacts of the ETS during Phase 1 have found no impact. The International Energy Agency (IEA) cites several reasons for this situation:

Experience to date with the EU-ETS does not reveal leakage for the sectors concerned—analysis of steel, cement, aluminum and refineries sectors reveals that no significant changes in trade flows and production patterns were evident during the first phase (2005-2007) of the EU-ETS. This is mostly due to the free allocation of allowances, sometimes in generous quantities, and to the still functioning long-term electricity contracts, which softened the blow of rising electricity prices. Further, the general boom in prices for most traded products subject to carbon costs—whether direct or indirect—has blurred any effects of the latter. Finally, the relatively short time span of these policies does not allow observation of the full potential effects on industry via changes in investment location decisions.²⁸

This conclusion is echoed by Carbon Trust, which states that currently, free allocation of emissions allowances offset almost all of the additional costs of the ETS; and it is echoed by The Climate Group for The German Marshall Fund, which states that companies surveyed found it difficult to quantify effects on their bottom line in the first phase, or found no effect at all.²⁹

Current Attitude of Companies under ETS

As noted earlier, the EC believes that one of the major positive outcomes of the ETS has been the incorporation of carbon prices in EU corporate decision-making. A survey of EU-ETS companies by Point Carbon suggests this assertion is true.³⁰ As indicated in **Figure 2**, companies are factoring the long-term price of carbon into their future investment decisions. According to Point Carbon, it is the power sector and the pulp and paper sectors that appear to consider the carbon price most decisive in their planning.

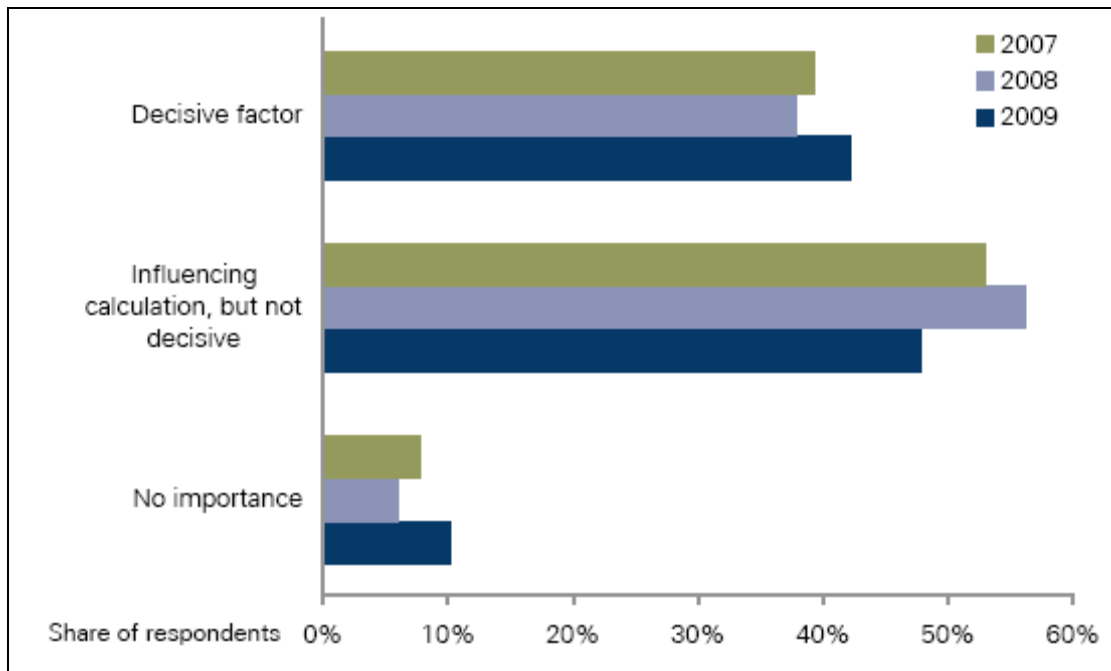
²⁷ Martina Priebe, *Distributional Effect of Carbon-Allowance Trading* (Cambridge, January 12, 2007). Also, see Eurochambres, *Review of the EU Emission Trading System* (June 2007), p. 5.

²⁸ Julia Reinaud, *Issues Behind Competitiveness and Carbon Leakage: Focus on Heavy Industry* (October 2008), p. 6.

²⁹ Carbon Trust, *EU ETS Impacts on Profitability and Trade* (January 2008), p. 4; and The Climate Group, *The Effects of EU Climate Legislation on Business Competitiveness; A Survey and Analysis* (September 2009), p. 8.

³⁰ Point Carbon, *Carbon 2009* (2009), p. 10.

Figure 2. How Important Is the Long-Term Carbon Price for New Investments in Your Industry?

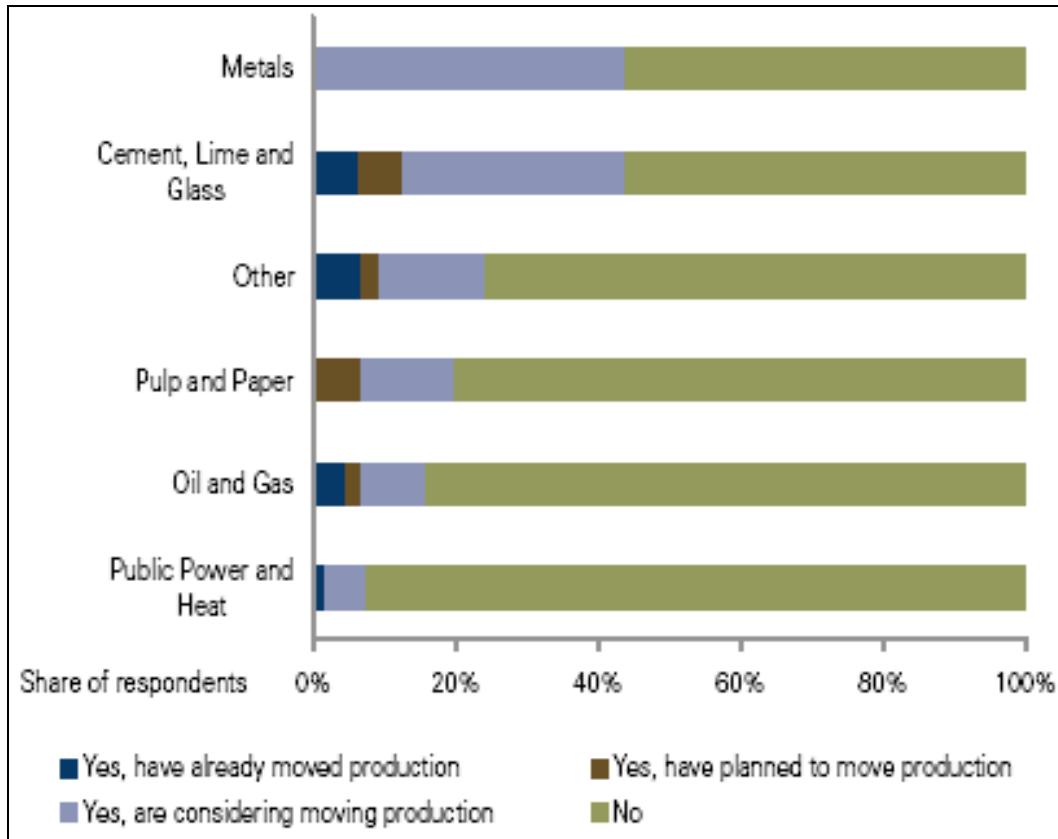


Source: Point Carbon, *Carbon 2009*, p. 10.

Notes: Long-term defined as 2020 in the questionnaire. A total of 301 companies affected by the EU-ETS were surveyed by Point Carbon.

With respect to considering moving production to other countries because of carbon prices, the Point Carbon survey of EU-ETS companies does not reveal a major trend yet. As indicated in **Figure 3**, over 80% of companies surveyed have not considered moving production because of carbon pricing; however, some of that includes companies, like power producers, that have limited relocation opportunities. A more detailed look at the figure indicates that 44% of the respondents in the metals, cement, lime, and glass sectors have at least thought about moving production. This may be one reason the EU included provisions extending the free allocation of allowances to such energy-intensive, trade-exposed sectors through Phase 3.

Figure 3. Companies Response to Carbon Price



Source: Point Carbon, *Carbon 2009*, p. 12.

Notes: A total of 301 companies affected by the EU-ETS were surveyed by Point Carbon.

These findings by Point Carbon were generally confirmed by the survey and analysis conducted by The Climate Group for The German Marshall Fund.³¹ Among that survey's conclusions were the following:

- Although costs for some firms are increasing, there is scant evidence of effects on competitiveness—but concerns about the future persist, especially as the number of free allowances decreases and CO₂ costs are reflected in electricity prices. The survey noted that aluminum smelters were particularly sensitive to electricity costs and that the pass-through of CO₂ costs may affect future production decisions.
- Companies have not relocated their operations, reduced their workforce, or lost market share as a result of carbon pricing to date.
- A market price for carbon has, to date, had a relatively low impact on how top management runs their businesses. But companies are quick at internalizing the EU-ETS into their strategic planning. Short-, medium-, and long-term effects of carbon pricing on strategic planning vary.

³¹ The Climate Group, *The Effects of EU Climate Legislation on Business Competitiveness; A Survey and Analysis*, (September 2009).

Determining Eligibility for Phase 3: The EC's List

Criteria Used for EC Eligibility List

Analysis indicates that there are industries that could be significantly impacted by the advent of higher carbon prices under Phase 3. As indicated by **Figure 4**, the cement, steel, and aluminum industries are considered by Carbon Trust to be the industries most exposed to higher carbon prices. As indicated above, the EU policies being developed are to buy time for these industries with free allowances while negotiating an international response that would level the playing field for all companies within a sector.

Figure 4. Carbon Trust Assessment of Exposure to Phase 3 Competitiveness Issues
(for the United Kingdom manufacturing sector)

Significantly: Cement/clinker; steel from blast oxygen furnaces; aluminium	EU cement and steel producers could lose up to 8% market share to overseas production in central price cases with highest trade sensitivities. Sufficient free allocation to maintain their profits can buy time to negotiate a multilateral response to trade exposure.
Plausibly: Fertilisers & nitrogen compounds; 'other' inorganic basic chemicals; pulp, paper and paperboard	Should be in the EU ETS with a compensating rate of free allocation, combined with other measures to help them tackle their exposure to carbon and electricity costs.
Possibly, at higher CO₂ prices: Some refineries; manufacture of glass; household paper; tyres; copper; potentially one or two other basic chemical processes	At higher carbon prices, some products from some refineries and a few other big activities could face trade impacts. Should be in the EU ETS; modest free allocation in Phase III, particularly for new sectors, would protect profits and give time to invest in lower carbon solutions, but should not extend beyond that.
Significantly, but very small activities: Notably lime production	Loss of market share to overseas production would involve tiny absolute carbon leakage. A political decision as to whether to ignore, offer protection, or exempt.

Source: Carbon Trust, *EU ETS Impacts on Profitability and Trade* (2008), p. 3.

Note: 159 manufacturing activities studied.

The list created by the EC suggests a more comprehensive view of potentially affected industries than that suggested above. The EC used five different sets of criteria in compiling its list of 164 subsectors and sectors.

1. Paragraph 4: Significant risk of carbon leakage criteria based on a sector's or subsector's ability to pass on the direct and indirect costs of control and allowance costs into its product's price without a significant loss of market share to less carbon efficient installations outside the Community (in accordance with Article 10a(14) of Directive 2003/87).

2. Paragraph 5(a): Significant risk of carbon leakage criteria based on whether a sector's or subsector's direct and indirect costs of control and allowance costs would represent a substantial increase of production costs, calculated as a proportion of the gross value added, of at least 5% and the intensity of trade with third countries, defined as the ratio between the total value of exports to third countries plus the value of imports from third countries and the total market size for the Community (annual turnover plus total imports from third countries), is above 10% (in accordance with Article 10a(15) of Directive 2003/87BC).
3. Paragraph 5(b): Significant risk of carbon leakage criteria based on whether a sector's or subsector's direct and indirect costs of control and allowance costs would represent a particularly high increase of production costs, calculated as a proportion of the gross value added, of at least 30% (in accordance with Article 10a(16) of Directive 2003).
4. Paragraph 5(c): Significant risk of carbon leakage criteria based on a sector's or subsector's intensity of trade with third countries, defined as the ratio between the total value of exports to third countries plus the value of imports from third countries and total market size for the Community (annual turnover plus total imports from third countries), is above 30% (in accordance with Article 10a(16) of Directive 2003).
5. Paragraph 14: Significant risk of carbon leakage criteria based on a qualitative assessment of a sector or subsector; criteria may include increased production costs, current and projected market characteristics, and profit margins (in accordance with Article 10a(17) of Directive 2003/87/EC).

A company's ability to compete under a carbon policy depends on three primary factors: (1) the greenhouse gas intensity of a company's products, which influences the company's profitability and the products' cost; (2) the company's ability to pass on any increased costs to consumers without losing market share or profitability; and (3) the company's ability to mitigate carbon emissions, reducing the impact of the carbon policy on its operations and profitability.³² Interestingly, only the second set of criteria used by the EC seems to incorporate all three factors in determining eligibility. Indeed, the fourth set of criteria used by the EC is based solely on trade-exposure: the impact of carbon control is not included in the criteria. The expansive eligibility requirements under the third and fourth sets of criteria results in 117 of the 164 sectors and subsectors listed by the EC, and includes everything from the manufacturing of wines to numerous textiles. While such sectors are trade-exposed, they are not generally considered to be greenhouse-gas intensive, as indicated by the Carbon Trust analysis cited above.

Data Sources Used for EC Eligibility List

The EC's inclusion of a qualitative set of eligibility criteria is suggestive of the data difficulties in setting up a comprehensive program to address carbon leakage. The EC's discussion of a qualitative analysis of the "Finishing of textiles" sector (Nomenclature des Activités Economiques or NACE code 1730) presented in paragraph 17 of the draft decision is illustrative:

³² See CRS Report R40100, "*Carbon Leakage*" and *Trade: Issues and Approaches*, by Larry Parker and John Blodgett, and Carbon Trust, *The European Emissions Trading Scheme: Implications for Industrial Competitiveness* (June 2004), pp. 6-7.

A qualitative assessment has been carried out on the sector of “Finishing of textiles” (NACE code 1730), primarily due to the fact that no official trade data at the Community level is available to assess trade intensity and that all other textile sectors are highly trade intensive. The assessment demonstrated increased international competitive pressure, significant drop in production in the Community over the last years and negative or only very modest profit margins for the years evaluated, which limit the capacity of installations to invest and reduce emissions. Based on the combined impacts of those factors, the sector should be deemed as exposed to a significant risk of carbon leakage. (paragraph 17)

The “Finishing of textiles” sector is not covered by the ETS and, therefore, the EC’s concern about the sector’s “very modest profit margins” that “limit the capacity of installations to invest and reduce emissions” seems somewhat irrelevant, at least at the current time. The sector may be trade-exposed; however, its primary impact from controlling greenhouse gas emissions is the indirect effects of increased electricity generating costs. As indicated by **Figure 1**, this sector’s indirect emissions account for less than 5% of its gross added value at stake. In its analysis of affected industries, Carbon Trust notes that the UK textiles finishing sector is not trade-exposed; “By far the most economically significant activities [within the UK textile industry], textiles finishing (at 230 million pounds GVA) appears in the source data as trading only domestically. Therefore, no major activities appear subject to significant carbon price impacts.”³³

Data difficulties expand beyond determining eligibility of domestic industry sectors or subsectors. As noted in paragraph 22 of the draft decision, the list is supposed to take into account the extent to which third countries that represent a “decisive share of global production” in the sectors or subsectors deemed exposed to carbon leakage (1) “firmly” commit to reducing greenhouse gas emissions in those sectors or subsectors “to any extent comparable to that of the Community and within the same time frame,” and (2) have installations located in their countries whose carbon efficiency is “comparable” to that of the Community. However, with respect to the second factor, the EC states:

As regards the carbon efficiency, the relevant data necessary for that assessment is not available due to incomparability of statistical definitions and general lack of global data at the required level of disaggregation and sectoral detail. Therefore, the criteria set out in Article 10a(18) of Directive 2003/87/EC had no effect on the list of sectors and subsectors. (paragraph 22)

U.S Proposals to Address Carbon Leakage: H.R. 2454

Greenhouse gas reduction legislation introduced over the last two Congresses has included provisions to address carbon leakage. In general, two strategies have been employed: (1) free allocation of allowances (similar to that of the EU); and (2) an international reserve allowance (IRA) scheme. H.R. 2454, as passed by the House, contains both of these strategies.³⁴

Title IV of H.R. 2454 would amend the bill’s new Title VII of the Clean Air Act by creating a new Part F to address carbon leakage. The purpose of the new Part F is both environmental, in terms of reducing potential carbon leakage resulting from potential shifts of production and investment

³³ Carbon Trust, *EU ETS Impacts on Profitability and Trade: A sector by sector analysis* (2008), p. 29.

³⁴ For more information on trade and carbon leakage issues, see CRS Report R40100, “*Carbon Leakage*” and *Trade: Issues and Approaches*, by Larry Parker and John Blodgett.

from the United States to countries without carbon controls, and economic, in terms of preventing the associated job loss from such a shift. Specifically, the purposes of Part F as a whole would be (1) “to promote a strong global effort to significantly reduce greenhouse gas emissions and, through this global effort, stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous anthropogenic interference with the climate system,” and (2) “to prevent an increase in greenhouse gas emissions in countries other than the United States as a result of direct and indirect compliance costs incurred under” the new Title VIII.³⁵

The free allocation scheme (subpart 1) would be further aimed at the following: (1) “to provide a rebate to the owners of and operators of entities in domestic eligible industrial sectors for their greenhouse gas emissions costs incurred under this title, but not for costs associated with other related or unrelated market dynamics”; (2) “to design such rebates in a way that will prevent carbon leakage while also rewarding innovations and facility-level investments in energy efficiency performance improvements”; and (3) “to eliminate or reduce distribution of emission allowances under subpart 1 when such distribution is no longer necessary to prevent carbon leakage from eligible industrial sectors.”³⁶

The IRA scheme (subpart 2) would have these additional purposes: (1) “to induce foreign countries, and, in particular, fast-growing developing countries, to take substantial action with respect to their greenhouse gas emissions consistent with the Bali Action Plan developed under the United Nations Framework Convention on Climate Change” and (2) “to ensure that the measures described in subpart 2 are designed and implemented consistent with applicable international agreements to which the United States is a party.”³⁷

H.R. 2454, Title IV, Subpart 1: Free Allocation of Allowances

Description of Rebate Program

Subpart 1 of the new Part F would create a rebate program directed at energy/greenhouse gas-intensive, trade-exposed industries harmed by the direct emissions reduction costs and indirect increased energy input costs from implementing Title VII (the cap-and-trade provisions of H.R. 2454). The program would begin by requiring EPA to publish a list of eligible industrial sectors and amount of allowances to be rebated per unit of production for the next two years by June 30, 2011 (revised every four years thereafter). Presumptively eligible industrial sectors would be determined at the six-digit classification level in Codes 31-33 of the North American Industrial Classification System of 2002 (NAICS).³⁸ As determined by EPA, presumptively eligible sectors, based on six-digit NAICS classification, are those that (1) meet energy or greenhouse gas intensity criteria (specifically, that energy or greenhouse gas costs are at least 5% of the value of their shipments) and trade exposure criteria (specifically, a trade intensity of at least 15%, based on the value of a sector’s total imports and exports divided by the value of its shipments and

³⁵ H.R. 2454, as passed, new section 761(a).

³⁶ H.R. 2454, as passed, new section 761(b).

³⁷ H.R. 2454, as passed, new section 761(c).

³⁸ H.R. 2454, as passed, new section 763(b).

imports); or (2) have very high energy or greenhouse gas intensity (at least 20%). The bill specifies data sources to be used in these determinations and, specifically, annual average data for 2004-2006, unless unavailable. However, the bill provides that EPA shall determine additional sectors to be eligible if they (1) meet the greenhouse gas or energy intensity criteria at the time the rule is promulgated and (2) meet trade intensity criteria based on post-2006 data. The bill also has provisions allowing individual entities to petition for inclusion of their subsector under the program (Section 763).³⁹ Potential coverage is focused on primary products, such as iron, steel, aluminum, and cement. The bill expressly prohibits the petroleum refining sector from being considered an “eligible industrial sector.”⁴⁰

Based on the best data available, EPA is to provide the rebate to eligible companies based on a two-part formula: (1) 100% of the industry’s annual average emissions per unit of output over the most recent four years multiplied by the company’s annual average output over the preceding two years (direct emissions); and (2) average emissions per kilowatt-hour of electricity purchased by the company multiplied by the industry average electricity used per unit of output over the preceding two years multiplied by an electricity efficiency factor to be determined by EPA (indirect emissions). Entities not covered by Title VII are eligible for the indirect emissions rebate. If these formulas result in more allowance needs than provided under the bill, the allocations to entities would be reduced on a pro rata basis to match the allowances available (Section 764).

Unless modified by the President, the allowance rebates are phased out over a 10-year period, beginning in 2026. Facilities that ceased to engage in qualifying activities would lose their allocations at the point they ceased those activities. As provided in Sec. 767, the President may modify the phase-out schedule for a sector if 15% or more of U.S. imports for that sector is still produced in countries with inadequate carbon policies.

Eligible Industries

The designation of six-digit NAICS codes for determining eligibility adds a level of precision to the program that could make implementation more straightforward than would otherwise be the case. While there are about 450 manufacturing sectors designated at this level within these three codes,⁴¹ it is likely that less than 50 of these would be deemed presumptively eligible under the detailed requirements set out in the bills. During deliberations on H.R. 2454, the Energy-Intensive Manufacturers’ Working Group on Greenhouse Gas Regulation provided detailed testimony on the energy intensity and trade intensity of the U.S. manufacturing sector.⁴² These data, based on analysis done for the Working Group by FTI Consulting, are presented in **Figure 5** and **Figure 6**. According to the Working Group, 47 sectors are presumptively covered under subpart 1. This

³⁹ The provision also provides that iron and steel made with different processes and metal, soda ash, or phosphate production classified under more than one NAICS code be treated as different categories under the section; and that differences in use of combined heat and power technologies be taken into account.

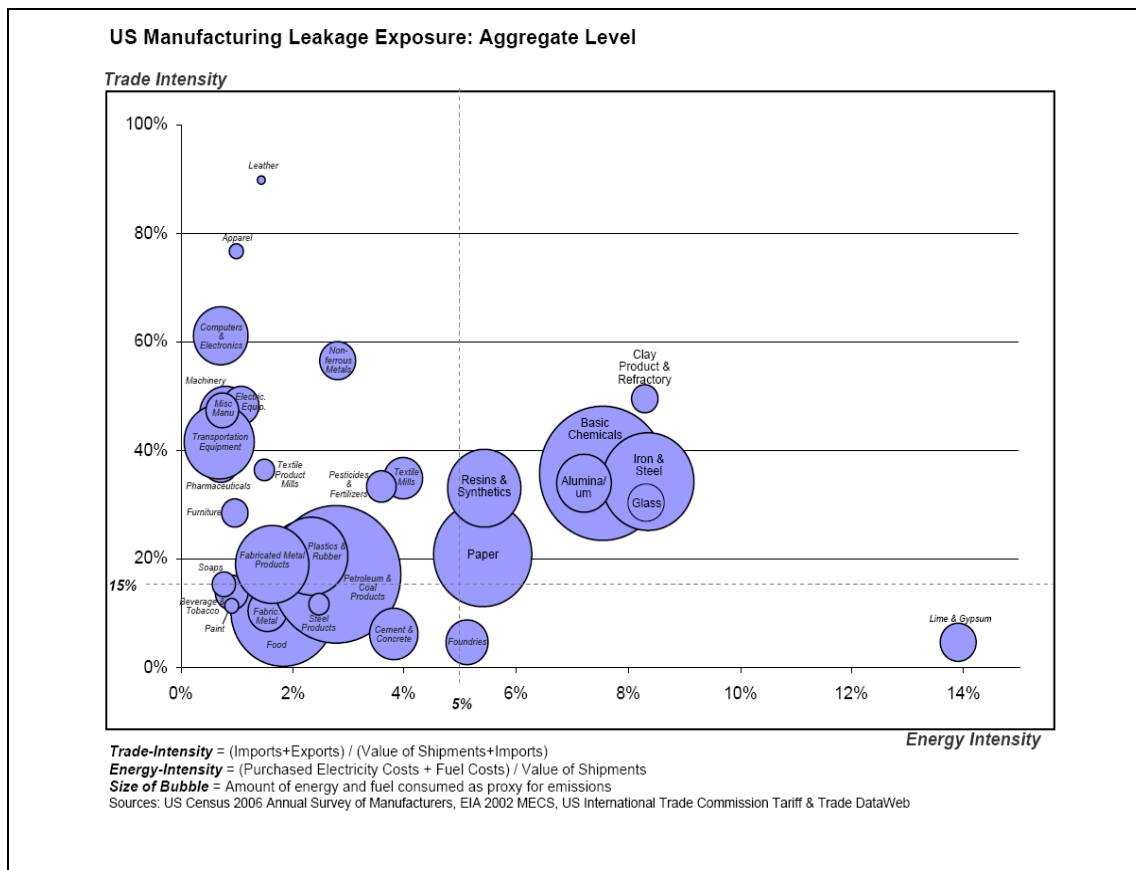
⁴⁰ H.R. 2454, as passed, new section 763(b)(2)(C).

⁴¹ The NAICS codes are updated every five years. H.R. 2454 specifically defines NAICS codes as 2002 NAICS codes. See 2002 NAICS Definition, 31-33, Manufacturing, at http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart_code=31&search=2002%20NAICS%20Search.

⁴² Testimony of John McMackin for the Energy Intensive Manufacturers’ Working Group on Greenhouse Gas Regulation before the House Committee on Ways and Means (March 24, 2009), available at <http://waysandmeans.house.gov/media/pdf/111/mcm.pdf>.

number is considerably less than the 164 sectors and subsectors potentially covered under the EC decision. The primary reason for the difference is that the main set of criteria incorporated in subpart 1 includes all three of the factors discussed earlier: (1) the greenhouse gas intensity of a company's products which influences the company's profitability and the products' cost; (2) the company's ability to pass on any increased costs to consumers without losing market share or profitability; and (3) the company's ability to mitigate carbon emissions, reducing the impact of the carbon policy on its operations and profitability.⁴³

Figure 5. U.S. Manufacturing Exposed to Carbon Leakage Risk



Source: FTI, *Greenhouse Gas Emissions Legislation: Leakage-Exposed Manufacturers: Briefing Book* (June 2009).

⁴³ The second set of criteria set up under Subpart 1 only adds one sector, lime manufacturing, to the list of presumptively covered sectors.

Figure 6. Presumptively Eligible Energy-Intensive, Trade-Exposed Industries

Qualifying Manufacturing Industries			Leakage-Intensity		Value of Shipments
Sectors	NAICS	Sub-Industry	Energy Intensity	Trade Intensity	
Pulp, Paper & Newsprint Mills	322110	Pulp mills	8%	89%	4
	322121	Paper (except newsprint) mills	8	24	47
	322122	Newsprint mill products	8	64	4
	322130	Paperboard mills	12	22	23
Basic Chemicals	325110	Petrochemicals	12	17	66
	325131	Inorganic dyes and pigments	5	55	4
	325132	Synthetic organic dyes and pigments	5	39	3
	325181	Alkalies and chlorine	25	27	6
	325182	Carbon black	8	26	2
	325188	All other basic inorganic chemicals	8	56	19
	325191	Gum and wood chemicals	7	26	1
	325192	Cyclic crude and intermediates	7	76	9
	325193	Ethyl alcohol	7	10	8
	325199	All other basic organic chemicals	7	52	69
	325211	Plastics material and resins	5	36	79
	325212	Synthetic rubber	6	56	7
	325221	Cellulosic organic fibers	6	53	1
325222	Non-cellulosic organic fibers	6	37	7	
Nitrogenous fertilizer	325311	Nitrogenous fertilizer	12	81	4
Ceramics/Porcelain	327111	Vitreous china plumbing fixtures	5	49	1
	327112	Vitreous china and earthenware articles	5	85	1
	327113	Porcelain electrical supplies	5	29	1
	327122	Ceramic wall and floor tiles	7	68	1
	327123	Other structural clay products	10	27	0.2
	327124	Clay refractory	5	26	1
	327125	Non-clay refractory	5	41	1
Glass Production	327211	Flat glass	16	44	3
	327212	Other pressed and blown glass and glassware; incl. optical fiber	11	57	4
	327213	Glass containers	14	19	4
Cement	327310	Cement	15	18	11
Lime	327410	Lime	23	3	2
Fiberglass	327993	Mineral wool	8	17	6
Iron & Steel	331111	Iron and steel	7	34	92
	331112	Electrometallurgical ferroalloy products	7	71	1
	331210	Iron and steel pipe and tube from purchased steel			10
	212210	Iron ore mining and beneficiation	18	54	2
Alumina/um	331311	Alumina refining	21	65	1
	331312	Primary aluminum production	22	64	6
Copper	331411	Primary smelting and refining of copper		71	10
	212234	Copper and nickel mining and beneficiation	6		
Other Industries	311221	Wet corn milling	10	19	10
	311313	Beet sugar	6	17	3
	314992	Tire cord and tire fabric mills	5	32	1
	321219	Reconstituted wood products	7	38	8
	327992	Ground or treated minerals and earth	9	17	3
	331419	Primary nonferrous metal (except copper and aluminum)	7	69	5
	335991	Carbon and graphite products	6	49	2

Trade-Intensity = (Imports+Exports) / (Value of Shipments+Imports)

Energy-Intensity = (Energy & Fuel Costs + Generation) / Value of Shipments

Sources: US Census 2006 Annual Survey of Manufacturers, EIA 2002 MECS, US International Trade Commission Tariff & Trade DataWeb

Note: Percentages are rounded to nearest percentage point

Source: FTI, *Greenhouse Gas Emissions Legislation: Leakage-Exposed Manufacturers: Briefing Book* (June 2009)

The EPA has also compiled a list of presumptively covered sectors; a list that is identical to that above, with two exceptions: paperboard mills (322130) and beet sugar (311313) are not included in the EPA list due to differences in data sources.⁴⁴

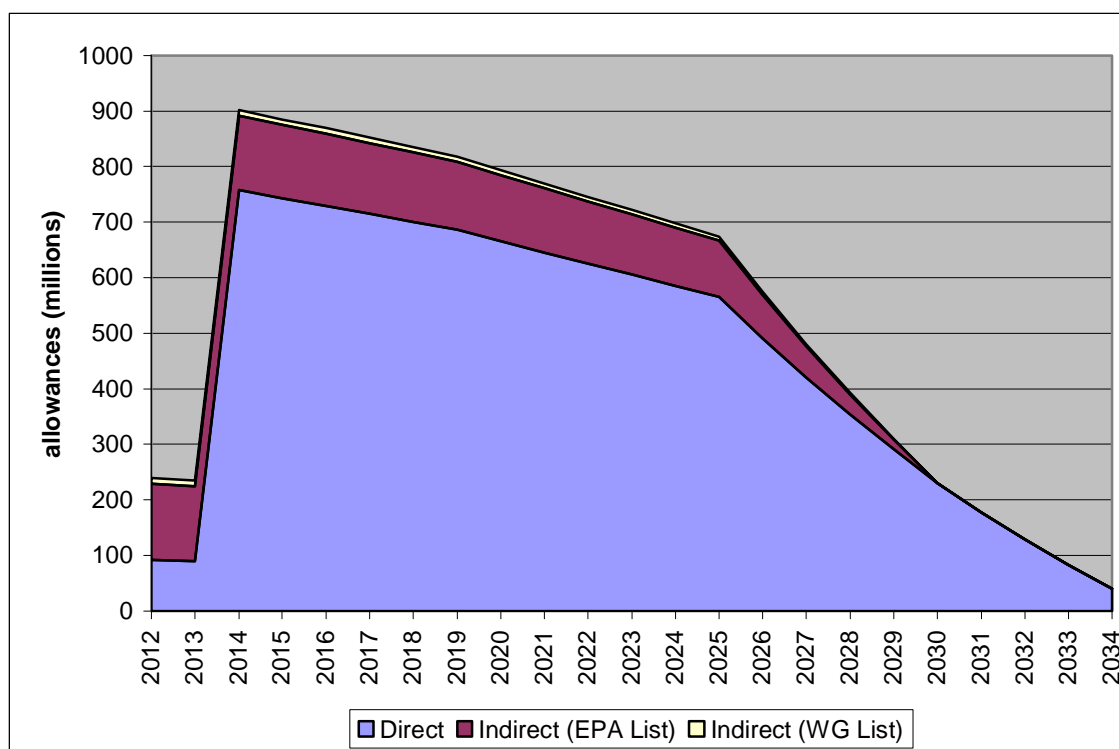
⁴⁴ U.S. Environmental Protection Agency, *Comparison of FTI and EPA analyses of H.R. 2454, Title IV*, Memorandum to the House Energy and Commerce Committee Staff (June 10, 2009).

Proposed Funding

Under H.R. 2454, energy-intensive, trade-exposed industries are allocated 2% of available allowances in 2012 and 2013, 15% of available allowances in 2014, and 13.4% of available allowances from 2015 through 2025. In addition, H.R. 2454 mandates that energy-intensive, trade-exposed industries receive their share of allowance value provided local electric distribution companies (LDCs) for electricity rebates. According to 2006 Bureau of Census data, the eligible industries purchased between 295 billion (EPA list) and 315 billion (Working Group list) kilowatt-hours of electricity.⁴⁵ They represent between 29% and 31% of retail sales to the industrial sector in 2006, or between 8% and 8.6% of total retail sales. Assuming a pass-through of allowance value by the LDCs based on 2006 data, this would represent about 2.4% to 2.6% of available allowances.

The allowances these allocations represent are presented in **Figure 7**. After 2025, the allocation to energy-intensive, trade-exposed industries is phased-out over a 10-year period. The allocation to LDC is phased-out over a five-year period, beginning after 2025.

Figure 7. Direct and Indirect Allowance Allocations to Energy-Intensive, Trade-Exposed Industries under H.R. 2454



Source: H.R. 2454 and CRS calculations.

Notes: See text.

⁴⁵ The data for NAICS 212210 and 212234 are for 2007.

Analysis

Adequacy of Allocation

Both EPA and FTI (for the Working Group) have estimated the required allowances to compensate eligible industries for their direct and indirect greenhouse gas emissions. According to EPA, the total is 738 million allowances annually from 2014 through 2025, or 14.5% of available allowances; for the Working Group, the total is 828 million allowances. The differences result from higher estimates by the Working Group for paperboard, cement, plastics, iron and steel processes, and phosphates and soda ash. A breakdown of annual emissions by direct and indirect sources is provided in **Table 1**. In addition, the Working Group recommends an additional 10% be included as a reserve for individual showings of need and for methodological uncertainty. These contingencies raise the Working Group’s estimate to 910 million allowances annually, or 16.2% of available allowances.

Table 1. Direct and Indirect Emissions from Eligible Industries
(annually, in million metric tons of CO₂ equivalent)

Source	Direct Emissions from Combustion	Direct Emissions from Industrial Processes	Indirect Emissions from Electricity Consumption	Total
EPA	383	173	183	738
FTI	413	198	216	828

Source: U.S. Environmental Protection Agency, *Comparison of FTI and EPA analyses of H.R. 2454, Title IV*, Memorandum to the House Energy and Commerce Committee Staff (June 10, 2009).

Notes: EPA estimates are based on the average of 2004-2006 emissions, assuming no growth or efficiency improvements through 2025. FTI estimates are based on 2007 emissions, assuming no growth or efficiency improvements through 2005. Estimates do not include the reserve for individual showings of need and for methodological uncertainty included in the Working Group estimate of 910 million metric tons of CO₂ equivalent.

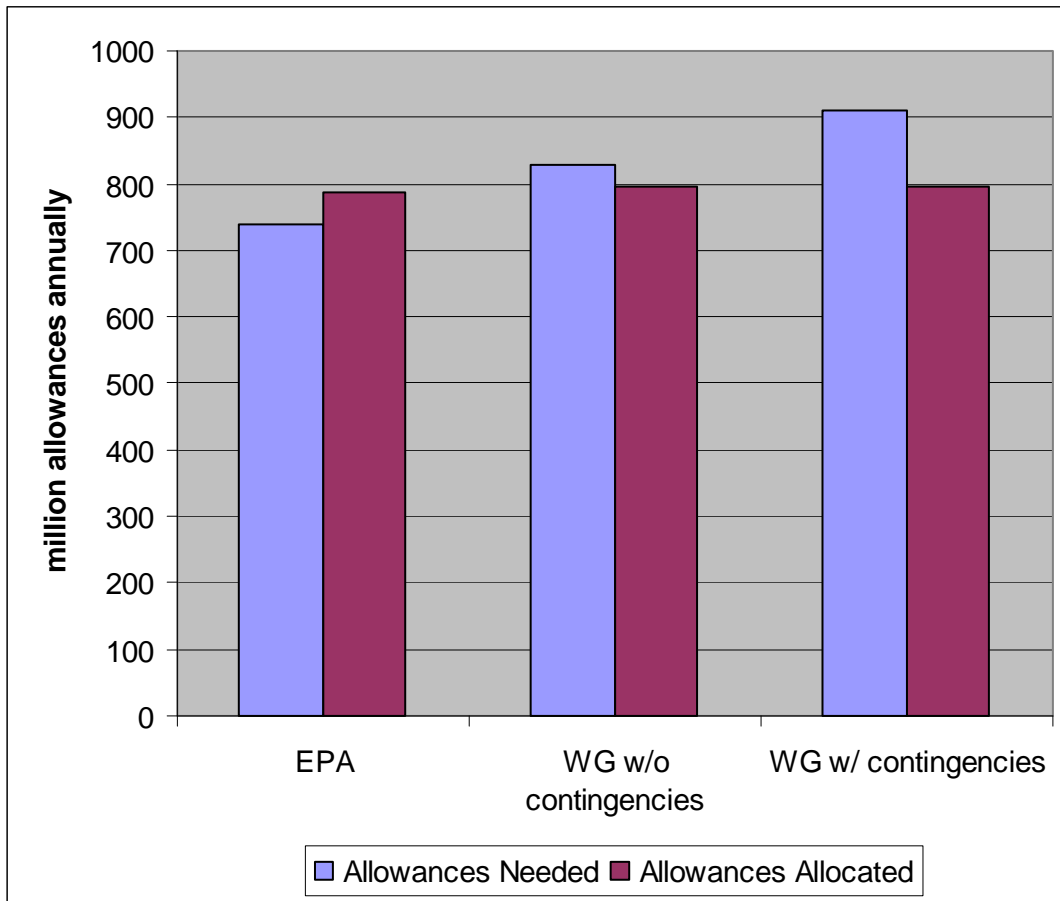
As noted above, after providing 15% of available allowances to energy-intensive, trade-exposed industries in 2014, H.R. 2454 provides 13.4% from 2015 through 2025. This would compensate between 82% and 92% of the industries projected direct and indirect costs. In addition, according to H.R. 2454, all industry is eligible for the pass-through of allowance value provided via local electric distribution companies (LDCs) (Sec. 783(b)(5)(D)). As noted above, based on Census Bureau and Energy Information Administration (EIA) data, CRS calculates a “ballpark” estimate of an additional 2.4% to 2.6% of available allowances being directed toward cost relief for energy-intensive, trade-exposed industries.⁴⁶ This estimate is considerably lower than the roughly 5% estimate provided to CRS by EPA. However, EPA notes that its numbers are overestimates of

⁴⁶ This calculation mixes two data sets and, therefore, should be viewed as a ballpark estimate. The data on purchases of electricity by the eligible sectors is from the U.S. Census Survey for 2006. The data for all retail sales is from the Energy Information Administration (EIA) for 2006. Based on Census data, the eligible industries purchased between 295 (EPA’s List) and 315 (Working Group list) billion Kwhs in 2006. Based on EIA data, that is equal to about 29%-31% of industrial sector retail sales or between 8% and 8.6% of total retail sales in 2006. All else being equal, eligible energy-intensive industry should get about 2.4% to 2.6% of total available allowances via the LDC pass-through (30% LDC allocation times 8%-8.6%).

actual amounts because their model’s (ADAGE) energy-intensive manufacturing sector is “much larger” than the industries made eligible by the language in H.R. 2454.⁴⁷

As indicated by **Figure 8**, H.R. 2454’s allocation scheme would appear to provide sufficient allowances if EPA’s estimates are correct. If the Working Group’s estimates are correct, or if individual showings of eligibility prove significant, the pool of allowances provided by the bill would not be adequate under the assumptions used here.

Figure 8. Projected Allowance Need and Allocation to Eligible Industries
(average annual, 2014-2025)



Source: CRS calculations and U.S. Environmental Protection Agency, *Comparison of FTI and EPA analyses of H.R. 2454, Title IV*, Memorandum to the House Energy and Commerce Committee Staff (June 10, 2009).

Notes: EPA estimates are based on the average of 2004-2006 emissions, assuming no growth or efficiency improvements through 2025. FTI estimates are based on 2007 emissions, assuming no growth or efficiency improvements through 2005. The Working Group w/o contingencies estimates do not include the reserve for individual showings of need and for methodological uncertainty included in the Working Group w/ contingencies estimate.

⁴⁷ Email correspondence from Jared Creason, Ph.D., Climate Economics Branch, U.S. Environmental Protection Agency (September 30, 2009).

Whether the individual state public utility commissions (PUCs) (or other responsible body in the case of publicly owned utilities or cooperatives) would work to ensure that LDCs did return to industry the share provided it in the bill or would attempt to tilt allocations in favor of residential consumers is disputed. The language of H.R. 2454 is clear with respect to providing energy-intensive, trade-exposed industries with their share of the electricity rebate (Sec. 783(b)(5)), and each allowance misused by a state would be considered a separate violation of the Clean Air Act. H.R. 2454 requires a representative sample of LDCs to submit an annual report on implementation of the electricity rebate; this is to include how they are complying with the requirement to provide allowance value to energy-intensive, trade-exposed industries. A question is whether or not this reporting requirement, along with EPA implementation of the enforcement provision, would sufficiently influence LDC and PUC decision-making.

The Working Group has expressed great skepticism about the states' public utilities commissions' willingness to pass through savings to industry instead of favoring residential consumers—a decision over which Congress would have limited influence. This skepticism may not be unfounded. In an October 28, 2009, letter to Chairman Boxer and Ranking Member Inhofe of the Senate Environment and Public Works Committee, the National Association of Regulatory Utility Commissioners (NARUC) urged the Senate to think carefully before “handcuffing” state regulators. As stated in the letter:

NARUC understands the need for federal oversight of what will undoubtedly be a significant amount of money flowing between LDCs and consumers. However, we also believe that State commissions are far more accountable to ratepayers than distant bureaucracies in Washington, and are far more efficient at developing innovative and entrepreneurial clean energy programs. State commissions know their localities and constituents best, and we are obligated to ensure fair, just and reasonable rates. The Senate should give States more leeway in distributing allowance proceeds so consumers can truly benefit.⁴⁸

Effectiveness of Free Allowance Scheme

Both the EPA and the Energy Information Administration (EIA) have explicitly examined the impact of H.R. 2454's free allowance allocation to energy-intensive, trade-exposed industries. In the EPA/ADAGE analysis, energy-intensive manufacturing output is projected to decline by 0.3% from base case levels in 2015 and by 0.7% in 2020 without H.R. 2454's free allocation scheme. With the free allocation scheme, energy intensive manufacturing output is projected to increase by 0.04% from base case levels in 2015, and then decline by 0.3% from base case levels in 2020.⁴⁹ The free allocation scheme phases out in the 2020s.

The EIA/NEMS analysis of energy-intensive, trade-exposed industries also indicates that the free allocation to those industries reduces the impact of H.R. 2454 that they would otherwise bear. As stated by EIA:

Receiving these permits ameliorates the impact of increased energy prices and therefore industries face energy prices that are not impacted by the permit values. As a result, when energy prices increase, the reductions in output of these trade- and energy-vulnerable

⁴⁸ Frederick F. Butler, President, National Association of Regulatory Utility Commissioners, Letter to Chairman Boxer and Ranking Member Inhofe (October 28, 2009), p. 2.

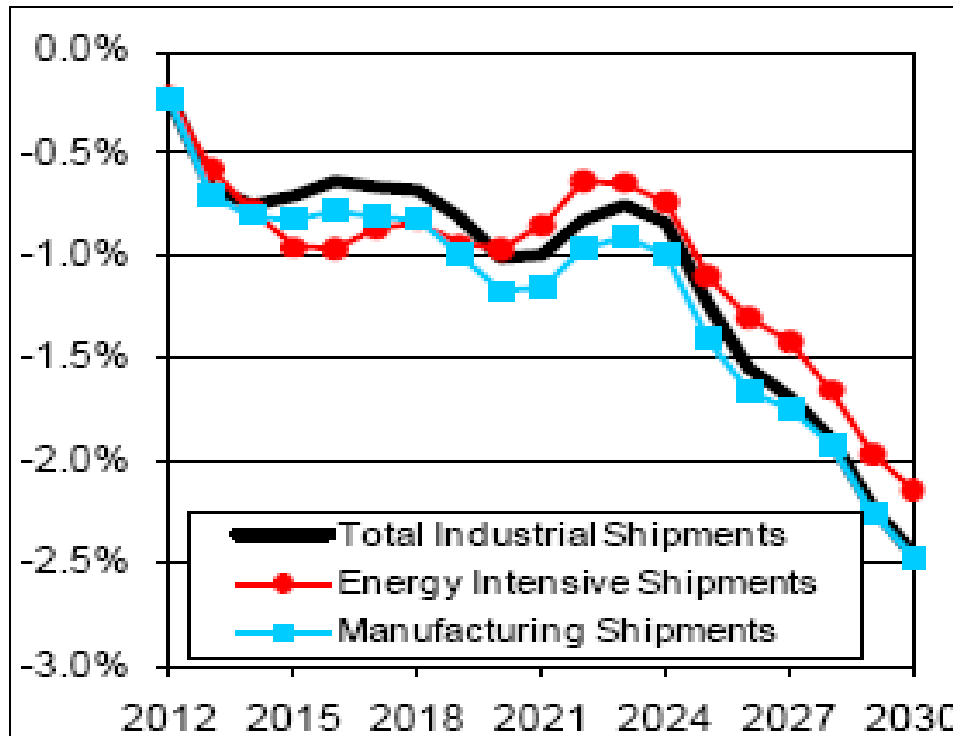
⁴⁹ U.S. Environmental Protection Agency, *EPA Analysis of the American Clean Energy and Security Act of 2009: H.R. 2454 in the 111th Congress—Appendix* (June 23, 2009), p. 42.

industries are less than overall manufacturing impacts and mirror the impacts (in terms of percentage change from the Reference Case) of total industrial shipments. In past EIA analysis of industrial impacts of energy price increases, these energy-intensive industries typically experience larger losses compared to overall manufacturing.⁵⁰ [footnotes omitted]

The overall effect of the free allocation over time can be seen in **Figure 9**, from the EIA report. As indicated, the impact on energy-intensive, trade-exposed industries is comparable to that on industry as a whole, suggesting that the allowance allocation has a positive effect in alleviating any disadvantage they may have from being exposed to international competition from countries without comparable carbon policies.

Although the scheme would appear effective in mitigating the trade-related impact of the program on energy-intensive, trade-exposed industries, production cost for those industries (along with other industries) could increase because of the potential pass-through of compliance-related costs by upstream producers of various inputs into their manufacturing processes (e.g., feedstocks, petroleum, etc.). Whether these costs would become significant would depend on the ability of upstream suppliers to pass on those costs, and the ability of the downstream industries to respond by increasing the efficiency of their operations or by substituting other, less-costly inputs into their processes.

Figure 9. Industrial Impacts in the H.R. 2454 Basic Case, 2012-2030
(percent change from Reference Case)



Source: EIA, *Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009* (August 2009), p. 45.

⁵⁰ EIA, *Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009* (August 2009), p. 44.

Phase-Out Schedule

H.R. 2454 provides that, unless modified by the President, the allowance rebates are phased out over a 10-year period, beginning in 2026. In addition, the pass-through of allowance value from LDCs is also phased-out, but on a shorter schedule (beginning in 2026 and reaching zero in 2030). As provided in Section 767, the President may modify the phase-out schedule for the direct rebate for a sector if 15% or more of U.S. imports for that sector are still produced by countries with inadequate carbon policies.⁵¹ There is no such authority for extending the pass-through received via the LDCs. As suggested by **Figure 9**, the EIA analysis assumes the phase-out begins on schedule in 2026 and the result is declining output for energy intensive, trade-exposed industries. This raises questions about the timing of any phase-out, and the extent to which the possible modification of the phase-out schedule introduces uncertainty in corporate decision-making.

H.R. 2454, Title IV, Subpart 2: International Reserve Allowance Scheme

Description of Program

Overview

If implemented, Title IV, subpart 2 of H.R. 2454 would require EPA to establish an international reserve allowance scheme that would essentially impose a shadow allowance requirement on importers of greenhouse gas-intensive, trade-exposed products, creating a de facto tariff. Basically, the scheme would require importers of energy-intensive products from countries with insufficient carbon policies to submit a prescribed amount of “international reserve allowances,” or IRAs, for their products to gain entry into the United States. Based on the greenhouse gas emissions generated in the production process, IRAs would be submitted on a per-unit basis for each category of covered goods from a covered country. Specifically, Section 768 requires EPA to promulgate rules establishing an international reserve allowance system for covered goods from the eligible industrial sector, including allowance trading, banking, pricing, and submission requirements.

While subpart 1 would limit the distribution of emission allowances to eligible industrial sectors, Part F’s definition of the term “covered goods,” a term used only in subpart 2, goes beyond goods produced by eligible industrial sectors to include a “manufactured item for consumption” (i.e.,

⁵¹ More specifically, and as discussed later in this report, beginning June 30, 2018, and every four years thereafter, the President would be required to determine for each eligible industrial sector whether more than 85% of U.S. imports for that sector is from countries that are either (1) parties to international agreements requiring economy-wide binding national commitments at least as stringent as those of the United States, (2) have annual energy or greenhouse gas intensities for the sector comparable or better than the equivalent U.S. sector, or (3) parties to an international or bilateral emission reduction agreement for that sector. If not, the President would be required, no later than June 30, 2018 (and every four years thereafter), to assess the effectiveness of subpart 1 rebates and the international reserve allowance program in mitigating or potentially mitigating the carbon leakage in that sector, and respond by (1) modifying the rebate formula under subpart 1, and (2) implementing (or continuing to implement) an international reserve allowance program with respect to imports of covered goods from that sector.

finished goods, which could involve items ranging from aluminum cans to automobiles).⁵² Allowances would potentially be required for importation into the United States of goods from a covered country that correspond to goods produced by U.S. eligible industrial sectors and, in some cases, for the importation of manufactured items for consumption from such countries.

The program would need to be consistent with U.S. commitments under international agreements, and in a manner that minimizes the likelihood of carbon leakage resulting from cost differentials resulting from compliance by U.S. companies with the U.S. reduction program compared with compliance by foreign companies with their nation's reduction program. The EPA would be required to adjust the international reserve allowance requirement based on the value of allowances allocated free under subpart 1 and under Section 782(a) (electricity providers), including reducing the requirement to zero. The international reserve allowances issued under this program may not be used by covered entities to comply with the domestic emissions cap under Title VII. Also, this program may not apply to imports entering the United States before January 1, 2020.

Initial Action: Section 765

Under Section 765, the President is required as soon as practicable after enactment to notify all non-exempted countries that the United States (1) seeks international agreements that commit all major emitting nations to contribute equitably to reducing greenhouse gas emissions; (2) requests the country take appropriate measures to limit its greenhouse gas emissions; and (3) may apply the international reserve requirements of this subpart to a covered good beginning on January 1, 2020. Exemptions are provided under section 768(a)(1)(E) for the (1) least developed countries, (2) countries that emit less than 0.5% of global greenhouse gas emissions and have minimal export trade with the United States in covered sectoral products, and (3) countries meeting the comparability criteria of Section 767 (discussed below).

Section 766 states the environmental and economic elements the United States would seek in negotiating an international greenhouse gas reduction agreement.

Further Requirements and Criteria: Section 767

The President is further required by January 1, 2017 (and biannually thereafter), to submit a report to Congress on the effectiveness of the emission rebates under Subtitle 1 at mitigating carbon leakage and recommendations on improving the subtitle's purposes.⁵³ The report must also include an assessment, for each industrial sector receiving rebates, as to whether, and by how much, the per unit cost of production has increased for the sector, taking into account the provision of the rebates to the sector and the benefit received by the sector from the provision of free allowances to electricity providers under new section 782(a). In addition, the report must contain recommendations on improving the purposes of subpart 2, including an assessment of whether an IRA program for the eligible industrial sector would be feasible and useful. Further, to the extent that the President determines that an IRA program would not benefit a particular

⁵² Also, under subpart 2, iron and steel produced by different processes shall be considered as one eligible industrial sector (Section 769). In contrast, subpart 1 would consider entities using different iron and steelmaking processes to be in different industrial sectors (Section 764(d)).

⁵³ H.R. 2454, as passed, new section 767(a).

eligible industrial sector because its exposure to carbon leakage is due to competition in third country markets (i.e., occurs because of the sector's export trade), the President would need to identify alternative actions or programs consistent with the purposes of subpart 2. The President could also determine in such a case that an IRA program will not apply to the sector, though the determination must be approved by Congress (see below). Finally, the report must assess the amount and duration of assistance, including the distribution of free emission allowances, being provided to industrial sectors in other developed countries to mitigate compliance costs for domestic greenhouse gas (GHG)-reduction in those countries.

In addition, unless there is a multilateral agreement on reducing greenhouse gases in force for the United States by January 1, 2018, the President would be required to establish an international reserve allowance program for all eligible sectors unless the President determines, and the Congress concurs, that a sector covered under the program, or inclusion of a sector within that program, would not be in the nation's economic or environmental interests.⁵⁴ To become effective, each such determination would need to be approved by both houses of Congress within 90 days after the President submitted his determination.⁵⁵ Precisely when such a presidential determination and congressional concurrence must occur is not explicitly stated; however, a strict interpretation would suggest it must occur before the President is required to make his next determination under the bill's provisions on June 30, 2018.

Beginning June 30, 2018, and every four years thereafter, the President would be required to determine for each eligible industrial sector whether more than 85% of U.S. imports of "covered goods" for that sector are produced or manufactured in countries that meet one of these criteria:

- (1) the country is party to "an international agreement to which the United States is a party that includes a nationally enforceable and economy-wide greenhouse gas emissions reduction commitment for that country that is at least as stringent as that of the United States";
- (2) the country is a party to a multilateral or bilateral emission reduction agreement *for that sector* to which the United States is a party; or
- (3) the country has annual energy or GHG intensity for the sector comparable to or less than the energy or GHG intensity for the sector in the United States for the most recent year for which data are available.⁵⁶

The bill does not appear to specify a time period within which the imports used in the calculation must have entered the United States, nor does it specify whether the quantity of imports is to be calculated on the basis of the value of the imports or on the basis of output (i.e., units imported).⁵⁷

⁵⁴ H.R. 2454, as passed, new section 767(b).

⁵⁵ Any such joint resolution would be considered under an expedited legislative procedure set out in section 152 of the Trade Act of 1974, 19 U.S.C. § 2191, providing for automatic discharge of the resolution from committee, a prohibition on amendments, and limited floor debate in the House and Senate. H.R. 2454, as passed, new section 767 (b)(2)-(3).

⁵⁶ H.R. 2454, as passed, new section 767(b)(1)(emphasis added). Although H.R. 2454 anticipates Senate or congressional approval of a multilateral GHG-reduction agreement, it does not appear to indicate how a sectoral agreement should be treated were such an agreement to be signed by the United States.

⁵⁷ Note that, for purposes of determining whether an industrial sector is eligible for free allowances, EPA would determine trade intensity by reference to the value of imports and exports (new section 763(b)(2)(A)(iii)).

See also the definition of "output" at H.R. 2454, as passed, new section 762(7) ("The term 'output' means the total tonnage or other standard unit of production (as determined by the Administrator) produced by an entity in an industrial (continued...)

If the 85% threshold is not exceeded, the President would be required to assess the effectiveness of both rebates (including the benefit that the sector receives from the provision of free allowances to electricity providers) and an IRA program in addressing or mitigating, or potentially addressing or mitigating, carbon leakage in that sector. The President would then need to respond by (1) modifying the rebate formula *and* (2) implementing (or, in the case of future determinations, continuing to implement) an IRA program for the sector.⁵⁸ If the threshold is exceeded, however, the President would be expressly prohibited from applying a sectoral IRA program.⁵⁹

Effectively, the international reserve allowance program would be established for all eligible sectors unless the Congress (or the Senate, in the case of a treaty) approves a multilateral agreement reducing greenhouse gases and the agreement enters into force for the United States, or the Congress votes to concur with a presidential determination that including an eligible sector would not be in the nation's economic or environmental interest. Further, once the program is established for a sector, H.R. 2454 would not permit the President to determine, as a result of his assessments, whether or not the rebate formula should be altered or an IRA program should be applied. By not providing for this intermediate step, the bill would effectively make these two actions mandatory once the President had determined that the 85% threshold had not been exceeded for the sector involved. In the event a program is to be applied, the bill would prohibit IRAs from being collected on goods imported into the United States before January 1, 2020.⁶⁰

EPA Implementing Regulations: Section 768

If implemented, section 768 requires that the regulations that EPA issues for an IRA program for an eligible industrial sector contain specific elements. The regulations must be issued with the concurrence of U.S. Customs and Border Protection (CBP), which has general statutory responsibility over the entry of goods into the United States, including the assessment and collection of duties and fees on imported products. Such regulations must

- establish an IRA program for the sale, exchange, purchase, transfer, and banking of IRAs for covered goods with respect to the sector;
- ensure that the price for purchasing IRAs from the United States on a particular day is equivalent to the auction clearing price for emissions allowances [under the new cap-and-trade provisions of Title VII] for the most recent emission allowance auction;
- establish a general methodology for calculating the quantity of IRAs that a U.S. importer of any covered good must submit;
- require the submission of appropriate amounts of IRAs for covered goods with respect to the eligible industrial sector that enter U.S. customs territory;

(...continued)

sector”).

⁵⁸ H.R. 2454, as passed, new section 767(d).

⁵⁹ H.R. 2454, as passed, new section 767(d)(2).

⁶⁰ H.R. 2454, as passed, new section 768(e).

- specify the procedures that CBP will apply for the declaration and entry of the sector's covered goods into U.S. customs territory;
- establish procedures that prevent circumvention of the IRA requirement for covered goods that are manufactured or processed in more than one foreign country.⁶¹

In establishing a general methodology for calculating the required number of IRAs for a covered good, EPA would be required to include an adjustment based on the value of rebates distributed to the eligible industrial sector involved as well as the benefit received by the sector from free allowances received by electricity providers under the bill.⁶² In applying such an adjustment, EPA would be permitted to determine that the amount of IRAs for a given product should be zero.

In addition, in administering a sectoral IRA program, EPA would need to exempt goods originating in three categories of countries from the border IRA requirement: (1) countries meeting any of the three standards set out in the new Section 767 for determining if a country had taken adequate action to reduce its GHG emissions for a sector, and ultimately, whether the corresponding U.S. industrial sector merited further assistance (see below); (2) the least developed of developing countries (LDDCs); and (3) countries that the United States determines are *de minimis* emitters responsible for less than 0.5% of total global greenhouse gas emissions and for less than 5% of U.S. imports of covered goods for an eligible industrial sector.⁶³

The bill would also require the EPA to establish the IRA program “consistent with international agreements to which the United States is a party.”⁶⁴ Absent a limiting definition in the bills, this requirement would seemingly encompass all U.S. international agreements, including both environmental agreements and international trade agreements.

Decision-Making Process

Figure 10 is a flow chart that traces the decision-making process of the International Reserve Allowance scheme created by the Center for Clean Air Policy.⁶⁵

⁶¹ H.R. 2454, as passed, new section 768(a)(1)(A)-(D), (F)-(G).

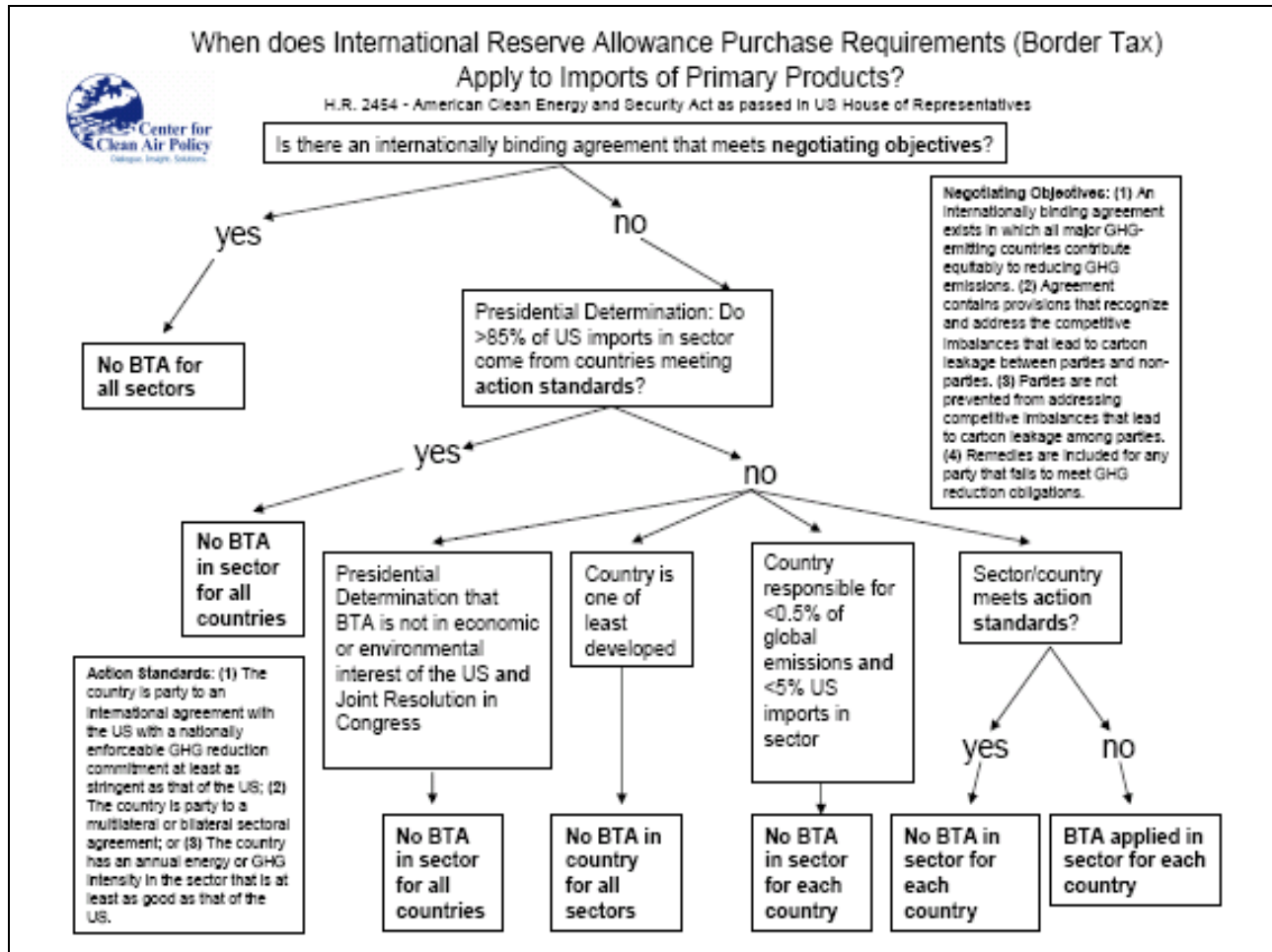
⁶² H.R. 2454, as passed, new section 768(b).

⁶³ H.R. 2454, as passed, new section 768(a)(1)(E).

⁶⁴ H.R. 2454, as passed, new section 768(a)(2). As noted earlier, H.R. 2454 also sets out as one of the purposes of subpart 2, “to ensure that the measures described in subpart 2 are designed and implemented in a manner consistent with applicable international agreements to which the United States is a party.” H.R. 2454, as passed, new section 761(c)(2).

⁶⁵ Center for Clean Air Policy, *Summary of Provisions to Protect the Competitiveness of U.S. Industry in the American Clean Energy and Security Act* (July 23, 2009), p. 24.

Figure 10. Decision Tree for IRA Scheme



Source: Center for Clean Air Policy, *Summary of Provisions to Protect the Competitiveness of U.S. Industry in the American Clean Energy and Security Act* (July 23, 2009), p. 24.

Analysis

Potential Impact

No analysis of subpart 2 and its impact on trade has been conducted. Indeed, the only analysis of an IRA scheme that has been done at all is one conducted by EPA (ADAGE) with respect to Title VI of S. 2191, introduced in the 110th Congress.⁶⁶ In that report, EPA's sensitivity analysis indicated that if countries without legally binding commitments to reduce greenhouse gases commit to maintaining their 2015 levels beginning in the year 2025, and to returning their emissions to 2000 levels by 2050, no international emission leakage occurred. Imports of energy-intensive goods were projected to fall under this scenario, while exports expanded as developing countries coped with their new emission limits.

⁶⁶ EPA, *EPA Analysis of the Lieberman-Warner Climate Security Act of 2008: S. 2191 in 110th Congress* (March 14, 2008).

In a worst case scenario, EPA's 2008 sensitivity analysis looked at a no-international-actions-to-2050 scenario. In this scenario, the International Reserve Allowance provisions of S. 2191 were assumed to be triggered because of the lack of international action. Emissions from countries without legally binding commitments were estimated to rise by 350 million metric tons of CO₂e by 2030 and 385 million metric tons by 2050—less than 1% of their base case levels under ADAGE. It would have been equivalent to U.S. emission leakage rates of approximately 11% in 2030 and 8% in 2050. These emissions compared with increases of 361 million metric tons and 412 million metric tons for 2030 and 2050, respectively, if the IRA provisions were not implemented. EPA described the impact of the IRA program on leakage as “minimal.”⁶⁷

The projected impact on imports was more significant. Without the International Reserve Allowance requirement, imports from countries without legally binding commitments were projected to increase 5.4% in 2030, rising to 7% in 2050. In contrast, under the IRA provisions, imports were estimated to increase about 1% in 2030 and decline about 5% in 2050. U.S. exports declined in both cases as countries used more of their domestic manufacturing capacity.⁶⁸

If the EPA projections for S. 2191 are transferable to H.R. 2454, the differential effect of IRA provisions on trade versus emissions leakage could present problems if the scheme is brought before the World Trade Organization (WTO).

In addition, this analysis does not fully account for the nature of international trade. Trade and economics involve dynamic processes that can respond to public policy in unanticipated ways. For example, trade sanctions based on primary goods, such as steel and aluminum, could have impacts on domestic downstream industries. An increase in the cost of raw steel or aluminum could drive up the costs of domestically manufactured finished products, such as automobiles, and encourage foreign countries to export more finished products to the United States. Indeed, a country could redirect its exports from primary goods to finished goods to avoid the trade sanctions. For example, South Korea, which exports both raw steel and automobiles, could focus its industrial policy toward automobile exports and away from raw steel exports. Thus, downstream companies that use greenhouse gas-intensive goods could have their competitiveness undermined by attempts to protect greenhouse gas-intensive, trade-exposed industries, particularly if their goods do not meet the criteria for “items manufactured for consumption” provided in the bill.

Data Needs

As noted earlier under the discussion of the EC's list of eligibility, lack of data prevented the EC from determining the carbon efficiency of installations in foreign countries (and thus their comparability with installations within the EU) as part of the criteria set out in Article 10a(18) of Directive 2003/87/EC. Instead, the EC chose to ignore the issue. This is not an option under subpart 2.

While official emission data in the United States generally take about one to two years to be collected, quality assured, and published, many other countries do not have the infrastructure to

⁶⁷ EPA, *EPA Analysis of the Lieberman-Warner Climate Security Act of 2008: S. 2191 in 110th Congress* (March 14, 2008), p. 84.

⁶⁸ EPA, *EPA Analysis of the Lieberman-Warner Climate Security Act of 2008: S. 2191 in 110th Congress* (March 14, 2008), p. 85.

create emission data on a timely basis. Under the United Nations Framework Convention on Climate Change (UNFCCC), the “most recent year” for emissions data for many countries is 1994. While U.S. emissions data are more reliable, the lack of equally reliable data for foreign countries may well prevent the United States from adequately determining whether the same conditions prevail in foreign countries and the United States (i.e., whether foreign GHG-reduction programs are in fact comparable to the United States). Moreover, the lack of reliable data may prevent the executive branch from properly determining whether the same conditions prevail in foreign countries relative to each other, that is, determinations may be made on different quantitative bases for different countries depending on data availability. The quality of data would also be a factor in determining which countries are not high emitters and are thus excluded from the import requirement altogether. Unreliable data may be particularly troublesome in implementing a statutory cutoff point and countries may fall just above or below the threshold.

For example, China submitted its “Initial National Communication on Climate Change” to the UNFCCC in October 2004.⁶⁹ The emission inventory included in that submission was for 1994. While China notes that its 1994 inventory was prepared in accordance with approved guidelines, uncertainties remained. It provides two reasons for the uncertainties:

Firstly, as a developing country, China has a relatively weak position with regard to data, and in particular has many difficulties in obtaining activity data for estimating GHG emissions; Secondly, though sample surveys and on-the-spot examinations were carried out to some extent in the energy, industrial processes, agriculture, land-use change and forestry, and waste treatment sectors to collect the basic data for inventory development, the time span and specific sample observation points may not be fully representative due to the constraints in funding, time available and other factors.⁷⁰

China is not alone. Emission data troubles exist for most “non-Annex 1” countries, that is, countries that are not subject to legally binding emission reductions under the Kyoto Protocol to the UNFCCC. As stated by the UNFCCC in its 2005 synthesis of initial national communications from non-Annex 1 countries: “Most Parties [non-Annex 1 countries] reported difficulties in preparing their GHG inventories, and indicated that their technical and institutional capacities were inadequate to meet their reporting obligations under the Convention for both the preparation and updating of national GHG inventories.”⁷¹

Other data-related aspects of subpart 2 may also raise implementation issues. For example, as noted above, the most recent year for which official data on Chinese greenhouse gas emissions is available is 1994. In contrast, the most recent calendar year for which official data of Chinese

⁶⁹ The People’s Republic of China, *Initial National Communication on Climate Change* (Beijing, October 2004).

⁷⁰ *Id.* at 4. Continuing on page 33 of the document, China says specifically with respect to the energy inventory: “Because existing statistical materials and data could not meet the needs for preparing the inventory, part of the activity data could only be obtained by adopting the methods of investigation and experts’ judgment. For example, activity data by device in some important industries such as building material and metallurgy was based on experts judgment; owing to the lack of the measured data on emission factors from coal combustion by sector and by device, the relevant potential emission factors and oxidations rates could only be determined through case studies, questionnaires and partial supplementary measurements; due to the lack of detailed measurement data, methane emissions under different circumstances from different types of biomass stoves could only be estimated by using the same emissions factors. All those would affect the accuracy of energy inventory.”

⁷¹ United Nations Framework Convention on Climate Change, Subsidiary Body for Implementation, *Sixth compilation and Synthesis of Initial National Communications for Parties not included in Annex I to the Convention: Addendum: Inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases*, FCCC/SBI/2005/18/Add.2, (October 25, 2005), p. 10.

production of major industrial goods (e.g., steel, iron, cement, etc.) are available is 2005.⁷² This calculation may produce not only an uneven result for a particular country, but the results for different countries may vary depending on the years for which data are available and thus provide uneven results between countries. For example, in contrast to China's 1994 emissions inventory, the latest submission to the UNFCCC by South Korea provides an emissions inventory for 2001.⁷³ Multiply these differences between countries across affected sectors, subsectors, primary goods, and "items manufactured for consumption," and EPA's ability to create the matrix of data necessary to implement the scheme becomes problematic, at best.

Presidential Determination to Exclude a Sector

In the absence of a qualifying multilateral GHG-reduction agreement, H.R. 2454 would permit the President to determine that an IRA program should not be established for an eligible industrial sector because it would not be in the national economic or environmental interest of the United States to do so. As evident from possible contents of the President's initial report to Congress, legislators would have contemplated that such determinations might involve eligible export-dependent industrial sectors. The bill would not appear, however, to expressly preclude the President from making such a determination regarding any sector that he saw fit to exclude. Nevertheless, since Congress would have apparently distinguished between sectors depending on whether their primary trade exposure from the U.S. cap-and-trade program is on the import or export side, it may be more difficult to secure congressional approval for excluding a sector whose primary concern is the adverse effect of imports into the United States from countries that do not have GHG-reduction programs or have not made commitments to create them. This outcome may be even more likely given that there does not appear to be authority in the bill for the President to establish an IRA program for a sector once Congress has approved its exclusion. Whether Congress would agree with a presidential request to exclude a sector could be a key question for other countries engaged in negotiations on multilateral GHG-reduction agreements.

"Covered Goods"

An IRA program would apply to "covered goods" for an eligible industrial sector, defined in the legislation as any good, as identified by EPA, that is produced by the relevant sector, as well as any "manufactured item for consumption," that is, a good that "includes in substantial amounts one or more goods like the goods produced by an eligible industrial sector" (i.e., a downstream item such as car or refrigerator in the case of steel products).⁷⁴ Further, the bill appears to intend that an IRA program be in effect for that eligible industrial sector and that the product or products included in the downstream item be subject to IRA allowances greater than zero.⁷⁵ In addition, the

⁷² National Bureau of Statistics of China, *China Statistical Yearbook—2006*, p. 14-24, available at <http://www.stats.gov.cn/tjsj/ndsj/2006/indexeh.htm>.

⁷³ See the UNFCCC website at <http://unfccc.int/di/DetailedByParty/Event.do?event=go>.

⁷⁴ H.R. 2454, as passed, new section 762(2).

⁷⁵ The definition of "manufactured item for consumption" lists several requirements that must be met for a product to qualify as such, including that the good be one, "(ii) with respect to which an international reserve allowance program pursuant to Subpart 2 is in effect with regard to the eligible industrial sector and the quantity of international reserve allowances is not zero ..." While the definition would make item (ii) applicable to the good for which the petition is filed, it would appear that item (ii) could logically apply only to the goods that are contained in the manufactured item. First, the producers filing the petition to include the particular "manufactured item for consumption" as a "covered good" could not have been part of an eligible industrial sector with an IRA program since, if they were, their goods would already have been at least potentially subject to IRAs. Second, the good for which the petition is filed could not (continued...)

industrial sector producing the good must have a trade intensity level of 15% or more and the producers of the good must demonstrate, and EPA must determine, that applying IRAs to the good is technically and administratively feasible and appropriate to achieve the purposes of Part F, taking into account the energy and GHG intensity of the sector producing the good (as determined under the formula that would be used to determine these levels for purposes of its qualifying as an “eligible industrial sector”), the ability of these producers to pass on cost increases, and “other appropriate factors.”

While the bill would require that the sector producing the good meet the same trade intensity level needed to qualify as an eligible industrial sector, the bill appears to treat energy or GHG intensity differently, making the producers’ existing levels, whatever they may be, a factor for the EPA to consider in deciding whether IRAs are feasible and appropriate to apply. In other words, in order to have their product be included as a “covered good,” petitioning producers may not necessarily be expected to meet all the requirements for being deemed an “eligible industrial sector” for purposes of Part F, whether presumptively or by petition.

“Manufactured Items for Consumption” (Downstream Items)

By including manufactured items for consumption, H.R. 2454 would allow a good that otherwise would not be a product of a sector eligible for an IRA to be treated as if it were and the good would thus be a covered good that might qualify for the IRA program. As explained earlier, we are assuming that the legislation intends that an IRA program already be in effect for the eligible industrial sector producing the “like” input or inputs into the manufactured item and that the IRA requirement for the input or inputs is greater than zero. It is unclear, however, what the word “like” means for purposes of this threshold requirement. While it could, but does not necessarily, mean identical, how dissimilar the imported input or inputs could be from the goods that are produced domestically is not specified.⁷⁶

Whether such a manufactured good would qualify for inclusion would depend in part on the trade intensity of the sector that produces the good. In addition, producers would seemingly need to provide EPA with a strong factual and analytical basis to allow it to determine that applying IRAs to the product would be technically and administratively feasible and appropriate in the circumstances. As noted earlier, however, producers would not appear to be required to meet the energy and GHG intensity standards needed to qualify as an “eligible industrial sector” in making their case and, moreover, “other appropriate factors,” unidentified in the bill, could enter into their argument and EPA’s ultimate determination. Overall, while the rationale for including goods produced by an eligible industrial sector in an IRA program is clear, the application of an IRA program to manufactured goods for consumption could be problematic in that it would extend the benefits of an IRA program to an industry that would not have initially qualified as an eligible industrial sector and may yet have difficulty doing so.

(...continued)

be one for which the quantity of IRAs is greater than zero, since the good would not yet be included in the sectoral program.

⁷⁶ The term “like product” is used in GATT obligations involving most-favored nation and national treatment, which prohibit WTO Members from discriminating between like products imported from different countries or between like imported and domestic items. “Likeness” is ordinarily determined by comparing products under four criteria: physical properties, end-uses, consumer preferences, and tariff classification. See, generally, World Trade Organization, WTO ANALYTICAL INDEX; GUIDE TO WTO LAW AND PRACTICE 145-48, 163-67 (2d ed. 2007).

Emphasis on International Action

As noted above, subpart 2 states that its purpose would be best achieved through international agreements negotiated by the United States and foreign countries and, to this end, states that it is U.S. policy to “work proactively under the United Nations Framework Convention on Climate Change, and in other appropriate fora, to establish binding agreements, including sectoral agreements, committing all major greenhouse gas-emitting nations to contribute equitably to the reduction of global greenhouse gas emissions.”⁷⁷ The bill also sets out U.S. negotiating objectives for the multilateral environmental negotiations contemplated in the bill. These are

to reach an “internationally binding” agreement in which all major GHG-emitting countries “contribute equitably” to the reduction of global GHG emissions;

to include provisions “that recognize and address the competitive imbalances that lead to carbon leakage and may be created between parties and non-parties to the agreement in domestic and export markets” and not to prevent agreement parties from addressing “the competitive imbalances that lead to carbon leakage and may be created by the agreement among parties to the agreement in domestic and export markets”; and

to include “agreed remedies” for any agreement party that fails to meet its GHG reduction obligations under the agreement.⁷⁸

The bill also states that nothing in the negotiating objective involving competitive imbalances may be construed to require the United States to alter provisions of new section 764, providing for the distribution of emission allowance rebates.⁷⁹

As discussed below, these objectives would be taken into account by the Senate or Congress when it considers whether to approve any resulting multilateral GHG-reduction agreement.⁸⁰ Whether the United States is a party to such an agreement by January 1, 2018, would determine whether the President must initially establish IRA programs for eligible industrial sectors. Further, if such programs are established, the existence of a multilateral GHG-reduction agreement would be a factor used by the President in determining whether an IRA program should be applied with respect to a particular eligible sector for a given four-year period.

As noted above, the President would be required to establish an IRA program for each eligible industrial sector if, by January 1, 2018, a multilateral GHG-reduction agreement consistent with the bill’s negotiating objectives has not entered into force for the United States, unless Congress has approved a presidential determination to exclude a sector.⁸¹ H.R. 2454 would utilize the legislative approval process for the contemplated international agreement as a vehicle for Congress to indicate whether or not the agreement meets the legislative negotiating objectives outlined above. Thus, if, in submitting an agreement to the Senate or Congress, the executive branch indicates that the agreement is consistent with these objectives, the agreement will be

⁷⁷ H.R. 2454, as passed, new section 765(a)-(b).

⁷⁸ H.R. 2454, as passed, new section 766(a).

⁷⁹ H.R. 2454, as passed, new section 766(b).

⁸⁰ The bill does not indicate how many countries other than the United States must be a party to the multilateral agreement for it to be acceptable to the Senate or Congress under these provisions. By definition, a multilateral agreement qualifies as such so long as it has at least three parties.

⁸¹ H.R. 2454, as passed, new section 767(b)(1).

considered to be consistent as of the date that the Senate consents to the agreement or “legislation is enacted implementing such other agreement.”⁸² The Senate or Congress may state in any such ratification or implementing measure, however, that the agreement should not be treated as consistent with these objectives for purposes of the requirement to establish IRA programs and for purposes of new section 768. It is under this section that EPA would issue regulations implementing an IRA program for each eligible industrial sector in the event that a qualifying agreement has not entered into force by January 1, 2018. As discussed below, any such regulations must exclude goods originating in any country that is a party to an international agreement to which the United States is also a party requiring a binding national GHG-reduction commitment as stringent as that of the United States.

Even if the multilateral GHG reduction agreement, by virtue of its approval by the Senate as a treaty or by Congress as a congressional-executive agreement, were deemed to be consistent with legislative negotiating objectives as of a date that meets the January 1, 2018, deadline, the agreement would still need to meet the other requirement of new section 767(b)(1), namely, that the agreement has entered into force for the United States. For this to occur, the agreement itself would have to have entered into force, a situation that ordinarily occurs when an earlier agreed upon number of countries have accepted or acceded to it, and the United States would need to have deposited its instruments of ratification or accession with the entity designated under the agreement to receive them (i.e., officially accept the treaty or agreement obligations as a matter of international law and thereby become a party to it). This process raises the question of implementing legislation since the United States might not accede to a treaty or international agreement until any legislation needed to enable it to fully perform its treaty or agreement obligations under domestic law is enacted.⁸³ Thus, even though the bill, with its cap-and-trade program and other GHG-reduction provisions, would have been enacted into law to arrive at this point, further legislative action to implement the treaty or agreement could still conceivably be needed, a requirement that may further delay its entry into force for the United States.⁸⁴

⁸² H.R. 2454, as passed, new section 767(b)(4).

⁸³ See Vienna Convention on the Law of Treaties art. 26 (“Every treaty in force is binding upon the parties to it and must be performed by them in good faith”); id. art. 27 (“A party may not invoke the provisions of its internal law as justification for its failure to perform a treaty”); and RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 111, reporters’ note h (1987).

Note, for example, the history of the multilateral Basel Convention on the Control of the Transboundary Movements of Hazardous Wastes and their Disposal. When the President submitted the Convention to the Senate in 1991, the accompanying transmittal notice stated that “[b]efore the United States can deposit its instrument of ratification, changes in domestic law will be needed.” S. Treaty Doc. 102-5, at X (1991). While the executive branch proposed implementing legislation to Congress at the time and the Senate gave its consent to the Convention in August 1992, 138 Cong. Rec. 22,861 (1992), implementing legislation has not yet been enacted and the United States has not become a Convention party. For additional background information on the deposit of instruments of ratification for a treaty or international agreement, see, generally, *Treaties and Other International Agreements: The Role of the United States Senate; A Study Prepared for the Senate Committee on Foreign Relations by the Congressional Research Service* 147-50 (Jan. 2001)(S. Prt. 106-71).

Implementing legislation may also address other implementation issues, such as the relationship of the agreement to federal and state law and whether private rights of action based on the agreement are allowed. See, for example, Uruguay Round Agreements Act, P.L. 103-465, § 102, 19 U.S.C. § 3512.

⁸⁴ It is unclear whether the implementing legislation referenced in new section 767(b)(4), the provision setting out how consistency with U.S. negotiating objectives would be established for a congressional-executive agreement, would also include provisions implementing the agreement as a matter of domestic law. Cf. Trade Act of 2002, § 2103(b)(3)(B), 19 U.S.C. § 2103(b)(3)(B), distinguishing between legislative provisions approving a trade agreement and provisions making changes in domestic law to implement the agreement. Moreover, if the multilateral GHG-reduction agreement is approved as a treaty, separate implementing legislation may still be needed.

Some of these concerns may also arise with respect to the multilateral and bilateral sectoral agreements whose existence would be a factor in the President's determination as to whether the 85% import threshold is exceeded for an eligible industrial sector. The United States must be a party to any such agreement, and thus questions related to approval and implementation may need to be addressed. At the same time, H.R. 2454 is more lenient with respect to the elements of sectoral agreements than it is with respect to the multilateral GHG-reduction agreement that would moot the requirement that IRA programs be established or be taken into account in determining whether the import threshold was met. H.R. 2454 places no requirements on the content of a sectoral agreement, and thus the executive branch would seemingly have discretion to agree to sectoral GHG-reduction commitments that are weaker than some would like. In such case, increasing the percentage to be applied to the base figure (i.e., U.S. imports) in House-passed H.R. 2454 may have been a way of making it more difficult to reach the threshold when goods imported from one or more countries that are party to such sectoral agreements would be included within the calculation.

Reactions from Other Countries: Defining “Comparable” Actions

There is a high probability of unintended consequences from subpart 2 as other countries react to the threat of a tariff. One potential consequence of subpart 2 is that foreign countries with more stringent carbon policies than those proposed in the United States could turn the tables and impose their own tariffs on U.S. goods exported to them. As discussed earlier, the EU has already agreed to a more stringent reduction program to the year 2020 than H.R. 2454 entails. Even if subpart 2 programs did not target the EU (because of the “comparable” provisions), it is conceivable that the EU might target the United States because of the U.S. lack of a reduction target “comparable” to that of the EU.

The argument about “comparability” could also extend to developing countries who are targeted by subpart 2. Targeted foreign countries could take the subpart's concept of comparability and employ a different metric—a metric more favorable to their situation—than the standard that subpart 2 would impose. For example, as illustrated in **Table 2**, developing countries could attempt to define comparability in terms of per capita greenhouse gas emissions. By that metric, China's greenhouse gas emissions are only one-quarter of those of the United States. For India, the metric is even more favorable; its emissions are only 8% of those of the United States. Based on this, or some other favorable metric, developing countries, such as China or India, could also turn the tables on the United States and impose their own tariffs on U.S. goods.

Table 2. Comparison of Top-20 Greenhouse Gas Emitting Countries
(2005 data)

2005 Rank	Country	Annex I	2005 GHG Emissions MMTCE	2005 Per Capita GHG Emissions (tons C/person)
1	China	No	1,970	1.5
2	United States	Yes	1,901	6.4
[3]	European Union-27	Yes ^a	1,378	2.8
3	Russian Federation	Yes	535	3.7
4	India	No	506	0.5
5	Japan	Yes	366	2.9
6	Brazil	No	277	1.5
7	Germany	Yes	267	3.2
8	Canada	Yes	200	6.2
9	United Kingdom	Yes	175	2.9
10	Mexico	No	172	1.7
11	Indonesia	No	162	0.7
12	Iran	No	155	2.2
13	Italy	Yes	154	2.6
14	France	Yes	150	2.5
15	Korea (South)	No	150	3.1
16	Australia	Yes	150	7.3
17	Ukraine	Yes	132	2.8
18	Spain	Yes	120	2.8
19	South Africa	No	115	2.5
20	Turkey	Yes	107	1.5
Total ^b			7,764	
	WORLD		10,569	1.6

Source: Climate Analysis Indicators Tool (CAIT) Version 6.0. (Washington, DC: World Resources Institute, 2008).

- a. The Kyoto Agreement gave explicit authority to the original 15-member European Union to meet its obligations collectively; the EU has, in effect, expanded that authority as it has incorporated new members. If the EU-27 were ranked in terms of its 2005 GHG emissions, it would place 3rd.
- b. Totals are of the 20 individual nations; they do not include the European Union.

Implications for International Trade Obligations⁸⁵

Both vehicles in Title IV of H.R. 2454 aimed at competitiveness and leakage concerns—the granting of free emission allowances to domestic firms and the imposition of border measures on imported products—raise issues involving U.S. obligations under World Trade Organization (WTO) agreements.⁸⁶ Legislation providing free emission allowances to carbon/energy-intensive trade-exposed industries may arguably confer a subsidy for purposes of the WTO Agreement on Subsidies and Countervailing Measures. Although the bill would require EPA to establish a border measure (IRA) program consistent with U.S. international agreements, a category that would include U.S. trade agreements,⁸⁷ a requirement that importers purchase IRAs to accompany particular imports might nonetheless be found to constitute a prohibited import surcharge or, if the product may not otherwise enter the United States, a prohibited quantitative restriction under the General Agreement on Tariffs and Trade 1994 (GATT).⁸⁸ If so, the requirement would need to be justified under a GATT exception to survive a WTO challenge. It is important to emphasize that while earlier GATT and WTO cases may provide a guide to the types of issues that may concern a WTO panel applying and interpreting GATT exceptions, measures are judged on a case-by-case basis. Thus, earlier decisions may not be fully predictive where a Member seeks to justify a novel and complex measure that affects a broad range of imported products, production processes, sources of manufacture, and trading partners.

Since the negotiating objectives set out in H.R. 2454 contemplate that a multilateral GHG-reduction agreement may include provisions permitting, or at least not prohibiting, individual parties to address trade-related “competitive imbalances that lead to carbon leakage,” it is possible that such an agreement could establish a set of principles or rights and obligations among the parties that address the allocation of emission allowances by WTO Member countries in the context of WTO subsidy obligations, provide scope for Members to impose border measures, or both.⁸⁹ A provision limiting the initiation of disputes for a defined period, a so-called “peace

⁸⁵ The discussion here is restricted to provisions of H.R. 2454 and does not explicitly address the program developed by the EU, although there may be some similarities.

⁸⁶ The WTO-consistency of such measures, particularly border requirements, has been the subject of considerable legal commentary, including discussion in a 2009 report prepared jointly by the United Nations Environment Program (UNEP) and the World Trade Organization. See *Trade and Climate Change; A report by the United Nations Environment Programme and the World Trade Organization* 90-110 (2009), at http://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf. A number of these commentaries are referenced in the UNEP/WTO report.

⁸⁷ The United States is also party to number of bilateral and regional free trade agreements (FTAs), including the North American Free Trade Agreement (NAFTA) and the Central America-Dominican Republic-United States Free Trade Agreement (DR-CAFTA), and bilateral agreements with such countries as Australia and Chile. These agreements incorporate certain GATT rights and obligations, such as national treatment of imported goods, a prohibition on quantitative restrictions, and general exceptions for measures that are inconsistent with agreement obligations, but also contain, among other things, their own tariff obligations, rules of origin, and dispute settlement procedures and, for the NAFTA, a chapter on energy trade. While the requirements of these agreements are not addressed in this report, it is important to note that two of the largest U.S. trading partners, Canada and Mexico, are parties to the NAFTA. To the extent that these countries are exporters of the types of products that are likely to be produced by eligible industrial sectors or later determined to be remediable “manufactured items for consumption,” relevant NAFTA obligations may also need to be considered by EPA in applying an IRA program to Canadian or Mexican goods.

⁸⁸ The General Agreement on Tariffs and Trade 1994 (GATT 1994), which consists of the GATT, as originally adopted in 1947 (GATT 1947) as well as subsequent GATT decisions, waivers, and other provisions, may be accessed at http://www.wto.org/english/docs_e/legal_e/06-gatt.pdf, and http://www.wto.org/english/docs_e/legal_e/gatt47_e.pdf.

⁸⁹ See, for example, *Elements of a Trade and Climate Code*, in Gary Clyde Hufbauer, Steve Charnovitz, and Jisun Kim, *GLOBAL WARMING AND THE WORLD TRADING SYSTEM* 103-110 (2009). Note also the now-expired Article 8.2(c) of the (continued...)

clause,” might also be included.⁹⁰ Such an agreement might also be negotiated separate from multilateral climate change negotiations. WTO Members could obtain a WTO waiver for the provisions of such an agreement, incorporate binding commitments into WTO law by amending the relevant WTO agreements, or adopt separately negotiated principles or guidelines in a WTO decision.⁹¹ Agreement on a binding WTO-related climate change accord is far from certain, however,⁹² and thus, absent such an agreement or broad adherence thereto by WTO Members,⁹³ the WTO dispute settlement process may ultimately serve as the main forum for resolving WTO legal issues involving problematic trade-related climate change measures.

Disputes arising under WTO agreements are heard under the terms of the Understanding on Rules and Procedures Governing the Settlement of Disputes (Dispute Settlement Understanding or DSU).⁹⁴ Other WTO agreements, such as the WTO Agreement on Subsidies and Countervailing Measures, while providing for dispute settlement under the DSU rules and procedures, contain certain special and additional rules, which prevail over those in the DSU in the event of differences between the two. Dispute settlement is administered by the WTO Dispute Settlement Body (DSB), consisting of all WTO Members.

WTO dispute settlement may be characterized as a three-stage process, consisting of (1) consultations; (2) panel and possibly Appellate Body proceedings; and, (3) if a WTO decision is

(...continued)

WTO Agreement on Subsidies and Countervailing Measures (SCM Agreement) exempting from WTO challenge certain “assistance to promote adaptation of existing facilities to new environmental requirements imposed by law and/or regulations which result in greater constraints and financial burden on firms,” so long as the assistance did not constitute a prohibited subsidy, in other words, an export subsidy or a subsidy contingent on the use of domestic over imported products. Assistance was exempted under this provision even though it may have been specific to an industry or group of industries, a condition that would ordinarily make a non-prohibited subsidy actionable. The SCM Agreement may be accessed at http://www.wto.org/english/docs_e/legal_e/24-scm.pdf.

⁹⁰ See, for example, WTO Agreement on Agriculture art. 13 (making certain domestic agricultural support and agricultural export subsidies exempt from WTO dispute settlement actions for the initial nine years of the Agreement); Agreement on Trade-Related Aspects of Intellectual Property Rights art. 64.2 (exempting non-violation claims—claims based only on trade injury and not on violations of the Agreement—from WTO dispute settlement for the initial five years of the Agreement; moratorium since extended). The Agreement on Agriculture may be accessed at http://www.wto.org/english/docs_e/legal_e/14-ag.pdf; the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) may be accessed at http://www.wto.org/english/docs_e/legal_e/27-trips.pdf.

⁹¹ Note, for example, WTO, Kimberley Process Certification Scheme for Rough Diamonds; Decision of 15 May 2003, WT/L/518 (May 27, 2003) (WTO waiver through December 31, 2006, for certain actions taken by WTO Members to control diamond trade pursuant to international agreement); WTO, Kimberley Process Certification Scheme for Rough Diamonds; Decision of 15 December 2006, WT/L/676 (December 19, 2006) (extension of waiver through December 31, 2012); WTO, Amendment of the TRIPS Agreement; Decision of 6 December 2005, WT/L/641 (December 8, 2005) (amendment of Agreement on Trade-Related Intellectual Property Rights to permit exporting Members to require compulsory licensing for the production of pharmaceutical products and to export such products to eligible importing Members). See also *WTO Members Agree to Further Extension of TRIPS/Medicines Ratification Deadline*, 26 Int’l Trade Rep. (BNA) 1497 (November 5, 2009).

⁹² See, for example, Pascal Lamy, Director-General, WTO, Climate First, Trade Second—GATTzilla is Long Gone, Address at Carleton University, Ottawa, Canada (November 2, 2009), at http://www.wto.org/english/news_e/sppl_e/sppl140_e.htm.

⁹³ In the event that not all WTO Members were party to a WTO-related segment of a multilateral GHG agreement or to a separate international agreement providing for measures to address competitiveness and leakage issues, the legal situation of non-party WTO Members would need to be addressed.

⁹⁴ For additional information on WTO dispute settlement, see CRS Report RS20088, *Dispute Settlement in the World Trade Organization (WTO): An Overview*, by Jeanne J. Grimmett, and the WTO website at http://www.wto.org/english/tratop_e/dispu_e/dispu_e.htm. The WTO Dispute Settlement Understanding may be accessed at http://www.wto.org/english/docs_e/legal_e/28-dsu.pdf.

adverse to the defending Member, implementation. Once the DSB adopts panel and any Appellate Body reports finding that the defending Member has violated a WTO obligation, the defending Member would ordinarily be expected to withdraw the violative measure.⁹⁵ If the Member could not comply immediately, it would be given a reasonable period of time to do so. In the event that the defending Member fails to comply by the end of the established compliance period, the complaining Member may seek compensation from the defending Member or request authorization from the WTO to impose countermeasures (i.e., to suspend WTO concessions or other obligations owed the defending Member, usually, to place additional tariffs on selected products imported from the Member).⁹⁶ The DSU treats countermeasures as measures of “last resort,” however, and permits them to be applied only as long as the measure found to violate WTO obligations remains in place or until the disputing parties settle their dispute in a mutually satisfactory way.

Certain actions by the DSB—namely, establishing a dispute settlement panel, adopting panel and Appellate Body reports, and authorizing a WTO Member to impose countermeasures—are virtually automatic; that is, the action will be taken unless all Members present at the DSB meeting agree not to do so (“reverse consensus” rule). The DSU contains an aspirational timeline of 18 months from the date a panel is established to the date a compliance period is determined. Complex cases are likely to require additional time, however, particularly at the panel stage.

Dispute settlement is generally Member-driven, so that it is up to the parties to a dispute to decide whether or not to take particular actions available to them (e.g., to request a panel, to request authorization to take countermeasures against a non-complying Member, or to apply such measures even if the WTO has authorized them). While the possibility of paying compensation or suffering the effects of retaliatory action may exert a degree of pressure on defending Members to comply with WTO decisions, and while DSU provisions indicate an overall intent that Members comply, the inclusion of compensation or retaliation as remedies, albeit temporary ones, recognizes that WTO Members may not always do so. In practice, Members have managed disputes at the implementation stage in a variety of ways short of taking retaliatory action.

Under GATT and now WTO dispute settlement practice, a WTO Member may challenge a measure of another Member “as such,” “as applied,” or both.⁹⁷ An “as such” claim challenges the measure as violative of a WTO agreement independent of its application in a specific situation and, as described by the WTO Appellate Body, seeks to prevent the defending Member from engaging in identified conduct before the fact.⁹⁸ Panels in past “as such” challenges have used an

⁹⁵ Under U.S. law, a WTO decision finding that a federal law is inconsistent with a WTO obligation cannot be implemented unless Congress amends or repeals the statute, as the case may be. WTO decisions faulting a U.S. agency regulation or practice may be implemented through administrative action under existing authorities, provided that procedures set out in § 123(g) of the Uruguay Round Agreements Act, 19 U.S.C. § 3533(g), are followed. For further discussion, see CRS Report RS22154, *World Trade Organization (WTO) Decisions and Their Effect in U.S. Law*, by Jeanne J. Grimmer, and CRS Report RL32014, *WTO Dispute Settlement: Status of U.S. Compliance in Pending Cases*, by Jeanne J. Grimmer.

⁹⁶ A disputing party may also request that a compliance panel be established to determine whether the defending Member has complied with a WTO ruling.

⁹⁷ Appellate Body Report, *United States—Anti-dumping Act of 1916*, paras. 60-61, WT/DS136/AB/R, WT/DS162/AB/R (August 28, 2000).

⁹⁸ Appellate Body Report, *United States—Sunset Review of Anti-Dumping Measures on Oil Country Tubular Goods from Argentina*, para. 172, WT/DS268/AB/R (November 29, 2004). The Appellate Body further described “as such” claims as follows: “By definition, an ‘as such’ claim challenges laws, regulations, or other instruments of a Member that have general and prospective application, asserting that a Member’s conduct—not only in a particular instance that (continued...)”

analytical tool known as the “mandatory/discretionary distinction,” under which a law or regulation was considered not to violate a GATT or WTO obligation if it did not mandate a WTO-inconsistent outcome or, in other words, could be applied in a WTO-consistent fashion.⁹⁹ If found to be discretionary under this analysis, the measure would need to be challenged “as applied.” At the same time, the WTO Appellate Body, without examining the role of the distinction in a comprehensive way, has stated that the distinction should not be applied in a “mechanistic fashion,”¹⁰⁰ and thus the existence of discretionary elements in a statute or regulation may not necessarily shield it from an “as such” challenge.

Distribution of Free Emission Allowances

General Characteristics of Emission Allowances

An emission allowance may be defined as governmental permission to emit one ton of carbon dioxide or carbon dioxide-equivalent.¹⁰¹ In a cap and trade system, recipients of emission allowances would include entities subject to emission caps and possibly other industrial entities that emit GHG gases directly in production processes and indirectly through the use of carbon-intensive fuels, as well as a broader array of entities that may be adversely affected by higher fuel prices resulting from compliance costs borne by capped fuel producers. The government may allocate allowances free of charge, require that they be obtained through an auction, or operate a mixed system incorporating both approaches.

Depending on its individual situation, a capped entity would use all of its allowances to cover emissions up to its annual cap; purchase additional allowances if it exceeded its cap and did not hold sufficient allowances to account for these excess emissions; or, in the event its annual emissions fell below the cap, sell unused allowances to other capped entities that need allowances to cover emissions that exceed their cap or bank them for future use or sale. Non-capped entities would either sell their allowances to capped entities or trade them in carbon markets. Thus, the situation of the recipient may differ depending on whether it is a capped or non-capped entity, and, if capped, whether the original allocation of allowances is sufficient, insufficient, or over-generous.

(...continued)

has occurred, but in future situation as well—will necessarily be inconsistent with that Member’s WTO obligations. In essence, complaining parties bringing ‘as such’ challenges seek to prevent Members *ex ante* from engaging in certain conduct. The implications of such challenges are obviously more far-reaching than ‘as applied’ claims.” *Id.*

⁹⁹ See cases cited in Panel Report, *United States—Laws, Regulations and Methodology for Calculating Dumping Margins (“Zeroing”)*, para. 7.55, n.158, WT/DS294.R (October 31, 2005).

¹⁰⁰ Appellate Body Report, *United States—Sunset Review of Anti-Dumping Duties on Corrosion-Resistant Carbon Steel Flat Products from Japan*, para. 93, WT/DS244/AB/R (December 15, 2003). Note also Panel Report, *United States—Sections 301-310 of the Trade Act of 1974*, WTO/DS152/R (December 22, 1999) (legislation granting discretionary powers may be found to be inconsistent “as such” if it does not create a strong legal basis for WTO-consistent action).

¹⁰¹ An “allowance” is defined in H.R. 2454, as passed, as “a limited authorization to emit, or have attributable greenhouse gas emissions in an amount of, 1 ton of carbon dioxide equivalent of a greenhouse gas in accordance with this title. Such term includes an emission allowance ...” H.R. 2454, section 321, as passed, adding new section 700(5).

Emission allowances have been recently characterized by the Congressional Budget Office (CBO) as “‘cash-like’ in nature” because they may be traded “in a large and liquid secondary market.”¹⁰² Moreover, in assessing the budgetary treatment of distributed allowances in a system where the government determines the scope of covered emissions and the number of allowances to be issued, CBO concluded that

the distribution by the federal government would be essentially equivalent to the distribution of cash grants, so CBO believes that such distributions should be treated as outlays. At the same time, allowances in a cap-and-trade system would be valuable financial instruments, so CBO thinks that the creation of allowances by the federal government should be recorded as revenues.

That logic does not hinge on whether the government sells or, instead, gives away the allowances. Allowances would have significant value even if given away because the recipients could sell them, or if they are carbon dioxide emitters, use them to avoid incurring the cost of purchasing allowances or investing in costly emission mitigation mechanisms. Therefore, selling allowances and giving entities cash, and giving entities the allowances themselves and letting the entities realize their value, are essentially the same transaction. Sound budgeting requires that the budget treat equivalent transactions in the same way.¹⁰³

In explaining its approach, CBO considers that the government grant of an allowance to a firm, business, or other recipient that would sell the allowance to a capped entity is a transaction that is “equivalent” to the government’s taxing the capped firm or selling it an allowance and subsequently giving the proceeds from the transaction to the recipient.¹⁰⁴

The Joint Committee on Taxation has added that considering emission allowances to be tradable, and thus “cash-like,” makes them similar to commodities, noting that sulfur dioxide and nitrogen oxide emission allowances created by the Clean Air Act and various types of carbon credits and their derivatives are already traded on commodities markets.¹⁰⁵ At the same time, the Committee found that allowances also “bear some resemblance to licenses that the government grants in other contexts, e.g., television broadcast licenses granted by the Federal Communication Commission, liquor licenses granted by State and local governments, and certain agricultural production quotas.”¹⁰⁶ As with these licenses, “emission allowances are transferable, intangible assets, the useful life of which can be limited by statute.”¹⁰⁷ The Committee continued:

The application of different analogies can lead to very different answers to the most basic tax questions presented by cap and trade. For example, whereas allocations of certain licenses by the government have been deemed to be nonrecognition events (i.e., no tax is imposed at the time the license is granted), few would argue that a government distribution of a commodity, such as gold, oil, or pork bellies, should not be taxable to the recipient.¹⁰⁸

¹⁰² Letter of Douglas W. Elmendorf, Director, Congressional Budget Office, to Hon. Henry A. Waxman, Chairman, House Committee on Energy and Commerce, May 15, 2009, at [1], at <http://www.cbo.gov/ftpdocs/102xx/doc10232/5-15-WaxmanLetter.pdf> (hereinafter, CBO Letter).

¹⁰³ *Id.* at [1]-2.

¹⁰⁴ *Id.* at 2.

¹⁰⁵ Joint Committee on Taxation, *Climate Change Legislation: Tax Considerations*, JCX-29-09 (June 12, 2009), at <http://www.jct.gov/publications.html?func=startdown&id=3559>.

¹⁰⁶ *Id.* at 6.

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

The Committee identified three alternatives for taxing allocated emission allowances, based on whether and when there would be an accession to wealth: (1) including them in income upon receipt, (2) including them in income when first available for use, and (3) excluding them from income.¹⁰⁹

It is clear that in providing emission allowances to domestic entities, the federal government would provide the recipient with a vehicle for the receipt of a monetary benefit, and thus it may be viewed in a broad sense as providing a subsidy to the recipient entity. As explained below, however, for the provision of emission allowances to constitute a subsidy in WTO terms, the government activity or practice must first qualify as a “financial contribution” or “an income or price support” as those terms are understood under WTO agreements. To date, neither GATT nor WTO jurisprudence has addressed this type of instrument in light of WTO subsidy obligations.

WTO Agreement on Subsidies and Countervailing Measures (SCM)

The provision of subsidies by WTO Members is governed by the WTO Agreement on Subsidies and Countervailing Measures (SCM Agreement), which elaborates upon and expands subsidy obligations contained in Article XVI of the GATT 1994 and contains detailed obligations involving the imposition of countervailing duties permitted under GATT Article VI. WTO Members may impose countervailing duties on imported products that are found to be subsidized by an exporting WTO Member and cause or threaten material injury to (or materially retard the establishment of) a domestic industry.¹¹⁰ A subsidy meeting the WTO definition may be challenged in a WTO dispute settlement proceeding or may be remedied by the imposition of countervailing duties on the subsidized product in an amount that does not exceed the subsidy conferred. While the GATT 1994 contains general public policy-related exceptions that may be invoked to justify GATT-inconsistent measures, the SCM Agreement does not contain a separate set of exceptions that would permit WTO Members to deviate from agreement obligations.¹¹¹

For purposes of the SCM Agreement, the term subsidy is defined as a “financial contribution by a government or any public body within the territory of a Member,” or an income or price support

¹⁰⁹ *Id.* at 7-11

¹¹⁰ GATT 1994 art. VI:5:6(a). The GATT 1994 and the SCM Agreement define a countervailing duty as “a special duty levied for the purpose of offsetting any subsidy bestowed directly or indirectly upon the manufacture, production or export of any merchandise.” GATT art. VI:3; SCM Agreement art. 10, n.36.

¹¹¹ It is sometimes posited that GATT Article XX exceptions may apply to other WTO agreements on trade in goods, such as the SCM Agreement. See, e.g., Bradley J. Condon, *Climate Change and Unresolved Issues in WTO Law*, 12 J. INT'L ECON. L. 895, 903-906 (2009). In a report issued in December 2009, the WTO Appellate Body found that China could invoke an exception in GATT Article XX as a defense to claims that certain of its regulatory measures were inconsistent with its WTO Accession Protocol obligations to grant all enterprises in China the right to import and export goods. Appellate Body Report, *China—Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products*, paras. 7.708-7.863, WT/DS363AB/R (December 21, 2009). Because the Appellate Body was construing language in an accession protocol stating that the acceding country's trading rights commitments were “[w]ithout prejudice to ... [the country's] right to regulate trade consistent with the WTO Agreement,” it remains unclear if GATT Article XX would be found to apply with respect to other WTO agreements. It should be noted that one WTO agreement that specifically incorporates GATT articles states explicitly that GATT exceptions apply to the agreement's provisions. Agreement on Trade-Related Investment Measures art.3; Agreement at http://www.wto.org/english/docs_e/legal_e/18-trims.pdf. Such express language would seem to give rise to the inference that the absence of such language in a WTO agreement evidences an intent that GATT Article XX does not apply.

in the sense of Article XVI of the GATT 1994 that confers a benefit.¹¹² A financial contribution will be found where:

(i) a government practice involves a direct transfer of funds (e.g., grants, loans, and equity infusion), potential direct transfer of funds or liabilities (e.g., loan guarantees);

(ii) government revenue that is otherwise due is foregone or not collected (e.g., fiscal incentives such as tax credits);

(iii) a government provides goods or services other than general infrastructure, or purchases goods;

(iv) a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the functions illustrated in (i) to (iii) above which would normally be vested in the government and the practice, in no real sense, differs from practices normally followed by governments.¹¹³

While an income or price support may constitute the requisite governmental involvement for purposes of the SCM Agreement, this provision has not been cited to any great extent in GATT or WTO jurisprudence.¹¹⁴ With respect to the second prong of the WTO definition, that is, the conferral of a benefit, a financial contribution will be found to do so if it places the recipient in a more advantageous situation than would have been the case absent the contribution.¹¹⁵

To be challenged in a WTO dispute settlement proceeding or to be subject to countervailing duties, the subsidy must be specific to an industry or enterprise or a group of industries or enterprises.¹¹⁶ Prohibited subsidies, as described below, are considered to be specific *per se*.¹¹⁷ Subsidies may be specific in law, that is, they may be explicitly limited to certain enterprises and not be administered under objective criteria or conditions, or they may be specific in fact.¹¹⁸ Regarding the rules under which the program operates, the SCM Agreement provides that specificity will not exist where legislation, or the granting authority operating under it, “establishes objective criteria or conditions governing the eligibility for, and the amount of, a subsidy ... provided that the eligibility is automatic and that such criteria and conditions are strictly adhered to.”¹¹⁹ Objective criteria or conditions mean those “which are neutral, which do not favour certain enterprises over others, and which are economic in nature and horizontal in application, such as number of employees or size of enterprise.”¹²⁰

The SCM Agreement divides subsidies into two categories: prohibited and actionable. Two types of subsidies are prohibited: (1) subsidies “contingent, in law or in fact ... upon export

¹¹² SCM Agreement art. 1.1(a)(1), (a)(2).

¹¹³ SCM Agreement art. 1.1(a)(1).

¹¹⁴ See, generally, World Trade Organization, *GUIDE TO GATT LAW AND PRACTICE; ANALYTICAL INDEX* 445-48 (updated 6th ed. 1995).

¹¹⁵ Appellate Body Report, *Canada—Measures Affecting the Export of Civilian Aircraft*, paras. 149-157, WT/DS70/AB/R (August 2, 1999) (hereinafter, *Canada Aircraft AB Report*).

¹¹⁶ SCM Agreement arts. 1.2.

¹¹⁷ SCM Agreement art. 2.3.

¹¹⁸ SCM Agreement arts. 21.(a), (c).

¹¹⁹ SCM Agreement art. 2.1(b)(footnote omitted).

¹²⁰ SCM Agreement. art. 2.1(b), n.2.

performance” and (2) subsidies “contingent ... upon the use of domestic over imported products” (also referred to as “import substitution” subsidies).¹²¹ The mere fact that a subsidy is granted to a firm that exports is not enough to render it an export subsidy for purposes of the Agreement.¹²²

Subsidies fitting the WTO definition that are not prohibited are considered “actionable,” that is, they may be challenged in a WTO dispute settlement proceeding if they cause “adverse effects” to the interests of another WTO Member.¹²³ Under Article 5 of the Agreement, adverse effects may take any of three forms: (1) injury to the domestic industry of another Member, as this concept is used in countervailing duty proceedings (a standard that focuses on the effect of the subsidized goods in the domestic market of the complaining Member); (2) nullification or impairment of another Member’s WTO benefits, generally tariff concessions on a given product; and (3) serious prejudice to the Member’s interests.

As set out in Article 6.3 of the SCM Agreement, serious prejudice occurs when the effect of the subsidy is (1) to displace imports of a like product of the complaining Member into the market of the subsidizing Member; (2) to displace or impede the exports of a like product of the complaining Member from a third country market; (3) significant price undercutting by the subsidized product as compared with the price of a like product of the complaining Member in the same market, or significant price suppression, price depression, or lost sales in the same market; and (4) an increase in the world market share of the subsidizing Member in a particular subsidized primary product or commodity as compared to the average share that the subsidizing Member had during the previous period three-year period and the increase follows a consistent trend over a period when subsidies have been granted.¹²⁴ In any such case, defining the nature of the “like product” and the affected market would be important components in determining if serious prejudice exists.¹²⁵

Under special dispute settlement rules for the SCM Agreement, if the WTO Dispute Settlement Body adopts a panel or Appellate Body report finding that a subsidy has resulted in adverse effects to another Member, the subsidizing Member “shall take appropriate steps to remove the adverse effects or shall withdraw the subsidy.”¹²⁶ If the Member has not done so within six months after adoption, and absent an agreement on compensation, the Dispute Settlement Body is to authorize the complaining Member to take countermeasures, “commensurate with the degree and nature of the adverse effects determined to exist,” unless the Dispute Settlement Body

¹²¹ SCM Agreement art. 3.1(a), (b). The WTO Appellate Body has determined that import substitution subsidies may be contingent in law or “in fact,” notwithstanding that the prohibition does not contain the quoted language. Appellate Body Report, *Canada—Certain Measures Affecting the Automotive Industry*, paras. 137-143, WT/DS139/AB/R, WT/DS142/AB/R (May 31, 2000) (hereinafter, *Canada Autos AB Report*).

¹²² SCM Agreement art. 3.1(a), n.4.

¹²³ SCM Agreement art. 5.

¹²⁴ See Articles 6.4 and 6.5 of the SCM Agreement for further explanation of the terms used in Article 6.3.

¹²⁵ The SCM Agreement states that, for purposes of the Agreement, the term “like product” means “a product which is identical, i.e. alike in all respects to the product under consideration [i.e. the subsidized product], or in the absence of such a product, another product which, although not alike in all respects, has characteristics closely resembling those of the product under consideration.” SCM Agreement art. 15.1, n.46.

¹²⁶ SCM Agreement art. 7.8.

decides by consensus to reject the complaining Member's request to impose such measures.¹²⁷ This time period may be extended by mutual agreement of the disputing parties.¹²⁸

Free Emission Allowances Under the SCM Agreement

For the provision of emission allowances to fit within the SCM Agreement's definition of a governmental financial contribution, the action would need to constitute (1) an actual or potential direct transfer of funds, (2) the foregoing of revenue otherwise due, or (3) the provision of a good or service other than general infrastructure. Because WTO panels have not had to deal with an instrument of this type, it is unclear how it would or should be characterized under this definition. It is also unclear how domestic tax or budgetary treatment of an allowance might affect this characterization.¹²⁹ The precise nature of an allowance is elusive for these purposes, and thus a variety of scenarios can be contemplated. This report addresses some of the more salient subsidy issues that may arise in this context.

While emissions have been characterized as "cash-like" in nature and would clearly constitute a valuable instrument from the point of view of the recipient, to the extent that an allowance is intended to be sold or traded, the allowance would in and of itself constitute a vehicle for a financial contribution by private parties, that is, the ultimate transfer of funds would be effected by the purchasers of the emission allowance rather than by the government. In such case, the transfer may not be the type of "direct transfer" of funds by the government that is generally contemplated by the first type of financial contribution listed above.¹³⁰

¹²⁷ SCM Agreement art. 7.9.

¹²⁸ SCM agreement, art. 7.4, n.20.

¹²⁹ As discussed earlier, CBO has stated that, for budgetary purposes, distributed allowances should be recorded as outlays and the creation of emission allowances as revenues. CBO Letter, *supra* note 102, at [1]. Note also that the WTO Agreement on Agriculture treats "budgetary outlays" as subsidies for purposes of calculating a WTO Member's aggregate domestic support for agricultural products, Agreement on Agriculture annex 3, para. 2, and that the SCM Agreement includes, as the last item in its Illustrative List of Export Subsidies, "[a]ny other charge on the public account constituting an export subsidy in the sense of Article XVI of GATT 1994." SCM Agreement annex I, para. (l) (emphasis added). Discussion of domestic budgetary treatment of emission allowances for purposes of the WTO subsidy definition is beyond the scope of this report.

¹³⁰ The role of private payments in a subsidy scheme was addressed in *Canada—Measures Affecting the Importation of Milk and the Exportation of Dairy Products* (WT/DS103, WT/DS113), where the WTO Appellate Body upheld a WTO panel finding that producer-financed payments to support the export of dairy products were covered by commitments to reduce export subsidies contained in WTO Agreement on Agriculture. Article 9.1(c) of the Agreement provides that reduction commitments apply to listed export subsidies, including "payments on the export of an agricultural product that are financed by virtue of governmental action, whether or not a charge on the public account is involved...." The Appellate Body first upheld the panel's finding that the provision of milk at discounted prices to processors for export under the challenged program constituted payments, though in a form other than money, within the meaning of the Article 9.1(c). Appellate Body Report, *Canada—Measures Affecting the Importation of Milk and the Exportation of Dairy Products*, para. 113, WT/DS103/AB/R, WTO/DS113/AB/R (October 13, 1999). The Appellate Body then upheld the panel's finding that producer-financed payments fell within the scope of the Article, provided they were "financed by virtue of governmental action." In upholding the panel, the Appellate Body stated that it was appropriate to look at governmental action as a whole in the payment system at issue and found that although the "'cost of selling milk at a reduced price for export is not borne by the government', 'governmental action' is, in our view, indispensable to the transfer of resources that take place as a result of the operation" of the program. *Id.* paras. 119-120. The Appellate Body found that governmental action was involved at every stage of the program and that, in the regulatory framework involved, "'government agencies' stand so completely between the producers of the milk and the processors or the exporters that we have not doubt that the transfer of resources takes place, by virtue of governmental action." *Id.* para. 120. While the SCM Agreement does not contain language stating that subsidies include "payments ... that are financed by virtue of governmental action, whether or not a charge on the public account is involved," the existence of (continued...)

As an emission allowance has also been characterized as a license and a commodity, one might alternatively argue that the provision of an allowance constitutes the provision of a good. While the WTO Appellate Body has confirmed that the granting of a government license may constitute the provision of goods to a recipient, its finding would appear to have limited utility in the current context. Because the license at issue permitted recipients to harvest standing timber on government lands, the government grant of a license was thus found to constitute the provision of timber, a potentially tradable product.¹³¹ In contrast, the provision of a free allowance would represent permission or authority to emit a defined amount of carbon dioxide or a carbon dioxide equivalent, a substance that would not be a salable good in the same sense as timber was in the above-cited example. Thus, if a similar analysis is applied to emission allowances, this category of government financial contribution is not likely to apply.¹³² Further, unlike commodities that are in and of themselves tradable goods, the item that is being traded here would essentially be a right to take a particular action rather than a tangible product.¹³³

A case for a subsidy may be made, however, once emission allowances are subject to government auction, an event contemplated by H.R. 2454 to begin in 2012. Under the SCM Agreement, the concept of revenue that is “otherwise due” requires an ascertainable standard against which a tax or other exemption is measured. As described by the WTO, this portion of the subsidy definition implies “an understanding that (i) ‘a financial contribution’ does not arise simply because a government does not raise revenue which it could have raised; and (ii) the term ‘otherwise due’ implies a comparison with a ‘defined normative benchmark.’”¹³⁴ In such case, the provision of an allowance without charge to a U.S. firm may arguably constitute the foregoing by the government of revenue that would otherwise be due, the specifics of the government auction serving as the applicable norm. It is also possible that the future tax treatment of distributed allowances may itself result in such foregone revenue. Although WTO jurisprudence on this portion of the subsidy definition most often focuses on tax measures,¹³⁵ the provision itself is generally written and is not limited to the tax area.¹³⁶

(...continued)

such language in another WTO agreement addressing subsidization may indicate that WTO Members generally contemplate that the level of governmental involvement in the actual realization of wealth by the beneficiary of a government program would exceed the mere allocation of an economic instrument to that beneficiary. Note also Panel Report, *Japan—Measures Affecting Consumer Photographic Film and Paper*, para. 10.49, WT/DS44/R (March 31, 1998) (“non-binding [governmental] actions, which include sufficient incentives or disincentives for private parties to act in a particular manner, can potentially have adverse effects on competitive conditions of market access” so as to nullify or impair legitimately expected WTO benefits for purposes of filing a non-violation complaint, i.e., a challenge to a non-violative measure of another Member on the grounds that it causes WTO-related trade injury).

¹³¹ Appellate Body Report, *Countervailing Duty Determination with Respect to Certain Softwood Lumber from Canada*, para. 75, WT/DS257/AB/R (January 19, 2004).

¹³² See, for example, Javier de Cendra, *Can Emissions Trading Schemes be Coupled with Border Tax Adjustment? An Analysis vis à vis WTO Law*, 15 RECIEL 131, 137 (2006); Jacob Werksman, *Greenhouse Gas Emissions and the WTO*, 8 RECIEL 251, 255 (1999).

¹³³ Note, for example, the definition of a “commodity” in IRS Regulation section 1.954.1(f)(2)(i) as “tangible personal property of a kind that is actively traded or with respect to which the contractual interests are actively traded.” See, generally, Matthew P. Haskins, *Green Trading in Carbon Emission Rights*, 122 TAX NOTES 387-88 (2009).

¹³⁴ World Trade Organization, WTO ANALYTICAL INDEX; GUIDE TO WTO LAW AND PRACTICE 755 (2d ed. 2007) (hereinafter, WTO ANALYTICAL INDEX).

¹³⁵ *Id.* at 754-57.

¹³⁶ See Canada Autos AB Report, *supra* note 121, paras. 87-94 (import duty exemption treated as foregoing of revenue that is otherwise due).

In the event that the provision of free allowances or the tax rules that applied to them were found to qualify as foregone revenue, the existence of a benefit may, in some situations, not be difficult to discern. In past cases, WTO panels, in determinations not subsequently appealed, have found that the tax exemptions were virtually coterminous with the existence of a benefit.¹³⁷ For example, in a report involving tax exemptions under the U.S. Foreign Sales Corporation (FSC) statute, the panel stated that, in its view, “the financial contribution clearly confers a benefit, in as much as both FSCs and their parents need not pay certain taxes that would otherwise be due,” noting further that the United States had not raised any contrary arguments regarding the benefit issue.¹³⁸ Similarly, in a subsequent case that involved a statute that repealed the FSC statute and established a replacement tax regime permitting the exclusion from taxation of certain income, the panel stated that under the new statute:

a taxpayer involved in a qualifying transaction may exclude qualifying foreign trade income from its gross income and therefore need not pay a certain amount of tax that it would otherwise have to pay to the United States government. It is therefore “better off” than it would have been absent the contribution, that is, if had been in another situation, where the conditions for obtaining the tax treatment under the Act were not fulfilled and it was therefore subject to otherwise applicable US taxation rules. We are of the view that the tax treatment in the Act confers a benefit.¹³⁹

Similarly, in a case involving whether an exemption from an import duty constituted a subsidy, the WTO panel, having determined that the exemption qualified as revenue foregone, easily found that it conferred a benefit since “the fact that manufacturer beneficiaries need not pay customs duties that would otherwise be due—and that would be paid by non-qualifying manufacturers—constitutes . . . an advantage” of the type that the Appellate Body had found in an earlier case.¹⁴⁰

In an assessment of whether a benefit is conferred, panels must focus on the recipient of the financial contribution rather than on the granting authority and the cost to the granting government.¹⁴¹ Because of the various situations of recipients of free allowances and because there may be particular legislative requirements or conditions accompanying their receipt, the existence or nature of the benefit, that is, whether a particular recipient is “better off,” may vary with respect to the recipient involved. Since WTO panels have not yet dealt with such an instrument, this remains a matter for further development by WTO panels and the WTO Appellate Body.

¹³⁷ In determining whether a benefit exists in cases involving the granting of loans or loan guarantees or the provision of goods or services, panels will examine whether the terms placed on the transaction by the government are more favorable than those available to the recipient in the marketplace. See, generally, WTO ANALYTICAL INDEX, *supra* note 134, at 761-73. See also Article 14 of the SCM Agreement, which sets out rules for calculating the benefit to a recipient where the governmental financial contribution consists of a equity capital, a loan, a loan guarantee, the provision of goods or services, or the purchase of goods.

¹³⁸ Panel Report, *United States—Tax Treatment for “Foreign Sales Corporations,”* para 7.103, WT/DS108/R (October 8, 1999).

¹³⁹ Panel Report, *United States—Tax Treatment for “Foreign Sales Corporations”; Recourse to Article 21.5 of the DSU by the European Communities,* para 8.46, WT/DS108/RW (August 20, 2001). As the United States had focused its arguments on the existence, or not, of a financial contribution, it again did not contest that a benefit would be conferred were the requisite financial contribution to be found. *Id.* para 8.47.

¹⁴⁰ Panel Report, *Canada—Certain Measures Affecting the Automotive Industry,* para. 10.165, WT/DS139/AB/R, WT/DS142/AB/R (February 11, 2000).

¹⁴¹ Canada Aircraft AB Report, *supra* note 115, paras. 153-156.

Were the provision of free allowances to constitute a subsidy for purposes of the SCM Agreement, the subsidy would not be prohibited under the Agreement so long as provision of the allowances was not contingent in law or in fact on export performance or on the use of domestic over imported products. Nevertheless, the subsidy would potentially be actionable, and thus subject to challenge if a complaining WTO Member could show that it had suffered one of the adverse effects set out in Article 5 of the Agreement. The complaining Member would also need to show that the subsidy was specific in law or fact to an industry or group of industries before proceeding with its showing of trade injury. While free allowances may be available to entities in a broad range of economic sectors and might be viewed as not limited by statute to “certain enterprises,” determining whether “objective criteria and conditions” governing the eligibility for, and the amount of, the subsidy exist would appear to be an important area of inquiry in determining if specificity is present.¹⁴²

International Reserve Allowance (IRA) Program

H.R. 2454, as passed, would also require that, if the President established an IRA program for an eligible domestic industrial sector and once he determines that the 85% import threshold for the sector is not exceeded, importers of products corresponding to those produced by the sector submit emission credits upon the entry of these products into the United States. The requirement would apply to a particular importation unless EPA has adjusted the border allowance requirement to zero for the product or the product is imported from a statutorily exempted country. In addition, “manufactured items for consumption,” that is, downstream products containing inputs that are subject to sectoral IRA requirements, may also be covered by border IRA requirements. Exemptions would apply to products imported from countries that have entered into acceptable multilateral or bilateral GHG-reduction agreements or whose annual energy or GHG-intensity for the sector is equal to or less than that of the United States. Also exempted would be products imported from the least developed or developing countries and from countries that are *de minimis* emitters and are the source of less than 5% of U.S. imports of covered goods for a sector. In issuing regulations establishing the program, EPA, with the concurrence of U.S. Customs and Border Protection, would incorporate certain statutory requirements, but would also be given discretion to establish a general methodology for calculating the quantity of IRAs that a U.S. importer of any covered good must submit and would be authorized to adjust IRA requirements based on emission allowances distributed to eligible industrial sectors and to reduce the amount to zero. The IRA requirements would not apply to goods that enter the United States before January 1, 2020, the earliest date for application specified in the statute.

General Agreement on Tariffs and Trade (1994)

Article I, the general most-favored-nation (MFN) obligation of the GATT, requires that certain trade-related benefits that a WTO Member grants to the products of any country must be granted “immediately and unconditionally” to like products of all WTO Members. The obligation applies to any advantage involving customs duties and charges of any kind imposed on importation or exportation, the method of levying such duties, all rules and formalities connected with

¹⁴² For a discussion of various issues that might arise in determining whether the distribution of free allowances is specific to an industry, see James Windon, *The Allocation of Free Emissions Units and the WTO Subsidies Agreement*, 41 GEO. INT’L L. J. 189, 203-16 (2009).

importation and exportation, and all matters related to internal taxation and regulation, that is, matters covered by the GATT national treatment article.

Article II, which generally prohibits tariff surcharges and border fees on imports, is aimed at ensuring that tariff concessions negotiated by WTO Members are maintained at negotiated rates. Each Member's tariff commitments are set out in a Schedule which lists the highest rate that a Member may impose on a given product, also known as the "bound" rate. Article II:1(b) provides that products imported from other WTO Members are to be exempt from ordinary customs duties in excess of those set out in the importing Member's Schedule and from "all other duties and charges of any kind imposed on or in connection with importation in excess of those imposed" on April 15, 1994, the date the WTO agreements were concluded. At the same time, Article II:2(a) provides that Article II does not prevent a WTO Member from imposing specific types of charges on bound items, including "a charge equivalent to an internal tax imposed consistently with the provisions" of the GATT national treatment article "in respect of the like domestic product or in respect of an article from which the imported product has been manufactured or produced in whole or in part."

Article III, the GATT national treatment article, prohibits WTO Members from discriminating between like domestic and imported products when imposing internal taxes and regulations. Where an internal tax or regulation is enforced at the border with regard to an imported product, the tax or regulation will be considered an internal measure and, as such, subject to Article III.

Article III:1 of the GATT 1994, which generally informs Article III obligations, states that "internal taxes and other internal charges and laws, regulations and requirements affecting the internal sale, offering for sale, purchase, transportation, distribution or use of products ... should not be applied to imported or domestic products so as to afford protection to domestic production."

Article III:2, which addresses taxes on products (e.g., excise and sales taxes, also referred to as "indirect taxes") states that the products of a WTO Member imported into the territory of another WTO Member "shall not be subject, directly or indirectly to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products." To determine whether the tax on an import exceeds the tax on the like domestic product, a strict test is applied, under which "even the smallest amount of 'excess' is too much"; neither a "trade effects" test nor a *de minimis* standard qualifies the prohibition.¹⁴³ Further, Article III:2 requires that actual, rather than nominal, tax burdens be compared. An identical tax rate can be found in some cases to result in a heavier tax burden on an import because of the method of taxation, and thus a WTO review would likely take into account not only the tax rate but also "the taxation methods (e.g., different kinds of internal taxes, direct taxation of the finished products, or indirect taxation by taxing the raw materials used in the product during the various stages of its production) and of the rules for tax collection (e.g., the basis of assessment)."¹⁴⁴ In general, panels have viewed the policy purpose behind a tax as irrelevant so long as the Member imposing the tax does not violate the GATT or other WTO obligations.¹⁴⁵

¹⁴³ Appellate Body Report, *Japan—Taxes on Alcoholic Beverages*, at 23, WT/DS8/AB/R, WTDS10/AB/R, WT/DS11/AB/R (October 4, 1996) (hereinafter, Japan Beverages AB Report).

¹⁴⁴ Panel Report, *Argentina—Measures Affecting the Export of Bovine Hides and the Import of Finished Leather*, para. 11.182, WT/DS155/R (December 19, 2000).

¹⁴⁵ See, for example, Panel Report, *United States—Taxes on Petroleum and Certain Imported Substances*, L/6175 (June (continued...))

Article III:4 of the GATT 1994, requiring national treatment in internal regulation, states that products of any WTO Member imported into the territory of any other Member “shall be accorded treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use.”

In determining whether imported and domestic goods are “like” products for purposes of both GATT Article III:2 and Article III:4, panels have ordinarily used four criteria: (1) the properties, nature, and quality of the products; (2) end-uses; (3) consumers’ tastes and habits; and (4) tariff classification.¹⁴⁶ To date, GATT/WTO case law has not permitted Members, under GATT Article III, to distinguish between products that would otherwise be considered “like” on the basis of a processing and production method (PPM) that does not relate to a product characteristic. Thus, applying such a distinction in a regulatory scheme and subjecting products to different requirements based on this distinction may provide a basis for finding that an imported good is treated less favorably than the like domestic item or that any resulting import prohibition constitutes a quantitative restriction prohibited under Article XI, below.¹⁴⁷

Article XI:1 of the GATT generally prohibits quantitative restrictions on imports and exports, providing that “[no] prohibitions or restrictions other than duties, taxes or other charges, whether made effective through quotas, import or export licenses or other measures, shall be instituted or maintained by any contracting party [i.e. WTO Member] on the importation of any product of the territory of any other contracting party or on the exportation or sale for export of any product destined for the territory of another contracting party.” Deviations from this rule are allowed only in certain well-defined circumstances, generally unrelated to climate change issues. A quantitative restriction may be distinguished from an internal regulation enforced at the border by examining whether the measure affects the opportunity for importation or entering the market, in which case Article XI would apply, or whether it affects competitive opportunities in the domestic market, in which case Article III would govern.¹⁴⁸

Article XX, containing the GATT general exceptions and operating as a defense in GATT disputes, allows a WTO Member to justify, on a variety of public policy grounds, a measure that has been found to violate a GATT obligation. Conditioning market access on compliance with a policy unilaterally prescribed by a WTO Member, while potentially irksome to trading partners, has been viewed by the WTO Appellate Body as a common feature of measures falling within the

(...continued)

17, 1987), GATT, B.I.S.D. (34th Supp.) at 136 (1988); Japan Beverages AB Report, *supra* note 142, at 16.

¹⁴⁶ Appellate Body Report, *European Communities—Measures Affecting Asbestos and Asbestos-Containing Products*, para. 101 WT/DS135/AB/R (March 12, 2001) (hereinafter, EC Asbestos AB Report). “Like product” determinations under Article III are made on a case-by-case basis under a significant body of GATT/WTO jurisprudence. See, generally, *id.* at paras. 87-103 and WTO ANALYTICAL INDEX, *supra* note 134, at 145-48, 163-67.

¹⁴⁷ See Panel Report, *United States—Import Prohibition of Certain Shrimp and Shrimp Products*, paras. 7.11-7.17, WT/DS58/R (May 15, 1998). Although there is language in WTO decisions indicating that less favorable treatment of a like imported product may be permitted if it can be explained by factors unrelated to foreign origin (e.g., Appellate Body Report, *Dominican Republic—Measures Affecting the Importation and Internal Sale of Cigarettes*, para. 96, WT/DS302/AB/R (April 25, 2005)), there has not yet been a WTO case in which a panel or the Appellate Body has ratified less favorable treatment of an imported good under GATT Article III based on the fact that it was produced by means of a particular non-product-related processing or production method (PPM).

¹⁴⁸ Panel Report, *India—Measures Affecting the Automotive Sector*, para. 7.224, WT/DS146/R, WT/DS175/R (December 21, 2001).

scope of Article XX exceptions, and thus such a policy may be pursued under the GATT providing implementing measures satisfy Article XX requirements.¹⁴⁹

Of relevance in the climate change context are *Article XX(b)*, covering measures “necessary to protect human, animal or plant life or health” and *Article XX(g)*, covering measures “relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.” Any law or regulation that is provisionally justified under Article XX(b) or Article XX(g) must also comply with the proviso to Article XX, which requires 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.”

Border IRA Requirements under the GATT 1994

As explained earlier in this report, the manufacture of certain products results in direct carbon emissions. Production of these and other products may also result in what are deemed to be indirect carbon emissions due to the high amount of energy (generally electrical energy) needed for their production and the heavy use of carbon-based fuels to provide such energy. Thus, a focus of concern in a domestic GHG-reduction program is its implications for goods that are carbon-intensive, energy-intensive, or both.

Where emission caps are placed on energy producers and on manufacturers of carbon-intensive products, the cost of the caps for these producers and manufacturers, as well as for manufacturers that are heavy users of carbon-intensive energy, may adversely affect the competitiveness of these manufacturers’ products *vis à vis* the same or similar products produced in countries without carbon controls. Depending on the situation of the firm and the products produced, the loss of competitiveness may occur on the import side, the export side, or both. A significant and irremediable loss of competitiveness may cause such firms to move their production to countries without GHG-reduction controls, potentially resulting in increased GHG emissions in these countries, or “carbon leakage.” Increased emissions may also result from increased production by existing foreign facilities whose presumably more price-competitive goods would be in greater demand worldwide. In such case, a loss of competitiveness, an economic concern, would be the reason for an adverse environmental effect. A border IRA requirement that takes into account the level of greenhouse gases emitted in the production of the imported product in light of domestic regulatory requirements may seek to “level the playing field” for a particular product or sector and so prevent the carbon leakage that may negate the beneficial environmental outcome of the domestic GHG-reduction program.¹⁵⁰

Requirements of H.R. 2454 and GATT Articles

A border requirement of this type proposed under H.R. 2454—that is, requirement that an importer of a product from a country that has not taken sufficient action to reduce GHG emissions, as judged by the importing country—potentially implicates the GATT articles

¹⁴⁹ Appellate Body Report, *United States—Import Prohibition of Certain Shrimp and Shrimp Products; Recourse to Article 21.5 of the DSU by Malaysia*, paras.136-138, WT/DS58/AB/RW (October 22, 2001) (hereinafter, U.S. Shrimp (Article 21.5) AB Report).

¹⁵⁰ For further discussion, see CRS Report R40100, “Carbon Leakage” and Trade: Issues and Approaches, by Larry Parker and John Blodgett.

described above, namely, Article I, requiring most-favored-nation treatment; Article II, prohibiting added duties and other fees and charges on goods subject to negotiated tariff rates; Article III, requiring national treatment of imported products; and Article XI, prohibiting quantitative restrictions on imports.

Since an importer of a foreign-produced item would incur a cost in amassing the IRAs that would be needed for importation under H.R. 2454, the fees and charges paid by the importer may be found to constitute a “charge of any kind imposed on or in connection with the importation” of a item subject to tariff rates bound under GATT Article II and, as such, be prohibited under Article II:1(b). Because the vast majority of products in the U.S. GATT Schedule are subject to bound tariff rates, the requirements of Article II would apply broadly to products imported into this country. In one instance, a GATT panel found that the interest charges and other costs connected with the posting of security to guarantee that imports of a particular item would be made at a minimum price were “‘other duties or charges of any kind imposed on or in connection with the importation’ in excess of the bound rate within the meaning of Article II:1(b),” and thus inconsistent with this obligation.¹⁵¹ More recently, a WTO panel, citing this GATT case, found that the interest charges, costs, and fees incurred by importers in connection with posting an additional customs bond required by the United States were import charges prohibited by the above-quoted Article II:1(b) language.¹⁵² The United States did not appeal this finding.¹⁵³ As in these cases, the importer subject to the IRA requirements would incur the cost of obtaining the allowances to satisfy a requirement associated with an importation rather than pay a specified fee imposed directly on the carbon-intensive or energy-intensive product. Since Article II:1(b) speaks broadly of “duties or *charges of any kind*,” the expenditure of funds to obtain the required allowances may well result in the type of charge that falls within the scope of the Article II:1(b) obligation.

If the importer’s failure to comply with such requirements serves to prohibit a product from being imported into the United States, this aspect of the IRA program may also be viewed as inconsistent with the general prohibition on quantitative restrictions in GATT Article XI:1. Further, to the extent that a fee or charge would not apply to goods originating in a country with a GHG-reduction program or in a country exempted for other reasons (e.g., *de minimis* emissions), there may arguably exist discriminatory treatment of like products from non-exempted countries for purposes of the most-favored-nation obligation of GATT Article I.

Alternatively, the United States may be able to avoid the Article XI prohibition on quantitative restrictions if the IRA requirement on imports could be shown to be part of an internal regulatory regime governing the “internal sale, offering for sale, purchase, transportation, distribution, or

¹⁵¹ Report of the Panel, *European Community Programme of Minimum Import Prices, Licenses and Surety Deposits for Certain Processed Fruits and Vegetables*, para. 4.15, L/4687 (adopted October 18, 1978), at http://www.wto.org/gatt_docs/English/SULPDF/90950205.pdf. For the Article II:2(a) exception for internal taxes to apply, it would have to be shown that the import surcharge were “equivalent” to an Article III:2 internal tax applied “in respect of the like domestic product or in respect of a product from which the imported product has been produced in whole or in part.”

¹⁵² Panel Report, *United States—Import Measures on Certain Products from the European Communities*, paras. 6.62–6.67, WT/DS165/R (July 17, 2000).

¹⁵³ Appellate Body Report, *United States—Import Measures on Certain Products from the European Communities*, para. 100, WT/DS165/AB/R (July 17, 2000). The Appellate Body stated, however, that it agreed with the apparent U.S. concession during oral argument that, in light of the panel finding on charges and costs, the increased bonding requirements themselves were inconsistent with this portion of Article II:1(b). *Id.* If challenged, the IRA requirements, aside from the fees paid by individual importers, may similarly be found to be inconsistent with the cited obligation.

use” of carbon-intensive and energy-intensive products for purpose of GATT Article III:4. If so, the United States may be able to prohibit imports that do not meet U.S. regulatory requirements from entering the United States without violating Article XI. It appears difficult, however, to fit a border program such as provided for in H.R. 2454 within the parameters of this GATT article.

Generally speaking, the regulation of products based on their carbon emissions raises issues as to whether otherwise like items (e.g., a particular type of steel product) may be distinguished on this basis under current WTO law. If steel products are found to be like products based on the criteria ordinarily used by panels (i.e., product characteristics, end uses, consumer preference, and tariff classification), distinguishing them based on a substance emitted in their production may thus be a problematic basis for differing regulatory requirements, and thus a case for less favorable treatment of the like imported good could be made. More fundamentally, however, because H.R. 2454 would place its relevant domestic requirement (i.e., emission caps, on producers and not on the sale, purchase, or use of domestically produced carbon-intensive and energy-intensive goods), the bill would not appear to create the sort of domestic regulatory regime affecting domestic and imported *products* that is essentially contemplated under Article III. Thus, even though the production of domestic carbon-intensive and energy-intensive products may be economically affected by the requirements placed on domestic producers, the sale, purchase, or use of these goods would not be subject to regulatory requirements. The absence of a counterpart internal regulatory program applicable to goods produced in the United States would thus render the import prohibitions under the IRA program liable to the Article XI claims discussed above.

Justification of H.R. 2454 IRA Program under Article XX General Exceptions

As noted above, if a trade-related GHG reduction measure is challenged in a WTO dispute settlement proceeding and found to violate a GATT obligation, the defending Member may seek to justify it under a GATT general exception, the most likely candidates in the climate change context being Articles XX(b), covering measures “necessary to protect human, animal, or plant life or health” and Article XX(g), covering measures “relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.”¹⁵⁴ A measure falling within the scope of an exception is also subject to the overall Article XX proviso or “chapeau” requiring that any such 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.”

Finding that a measure is justified under an exception involves a complex analysis of the alleged policy goal, the relationship of the measure to the goal, and details of the measure’s implementation in light of the discriminatory and protectionist application to be avoided under the proviso. If challenged, it would not be the GATT-inconsistency that would need to fall within the scope of the exception, but rather the border measure program as a whole.¹⁵⁵ Because Article XX(b) requires a showing that a challenged measure is “necessary” to achieve the aim of health protection, whereas Article XX(g) requires only that a relationship be shown between the challenged measure and the stated conservation goal, it would generally be more difficult for a measure to qualify under the former than under the latter. In either case, however, since

¹⁵⁴ In addition, some GATT-inconsistent measures may qualify for the more generic Article XX(d) exception for “measures necessary to secure compliance with laws or regulations which are not inconsistent with” the GATT.

¹⁵⁵ See Appellate Body Report, *United States—Standards for Reformulated and Conventional Gasoline*, at 16, WT/DS2/AB/R (April 29, 1996) (hereinafter, U.S. Gasoline AB Report).

maintaining domestic competitiveness *per se* is not a policy goal protected by Article XX, the extent to which the IRA requirements of H.R. 2454 address articulated goals of protecting health or conserving natural resources would be critical in determining whether the program falls within the scope of the relevant exception.

Article XX(b)

Successful invocation of Article XX(b) first requires a showing that the policy objective of the challenged measure is to protect human, animal, or plant life or health, and that the measure is necessary to achieve this end. As noted below, the WTO Appellate Body has implied that health protection may be a goal of a domestic climate change program. At the same time, since the purported health protection would be achieved through the prevention of carbon leakage that is manifested as increased carbon emissions in foreign countries, and because Article XX(b) does not expressly state whether the objects of protection need to be located in the territory of the Member imposing the restriction, a jurisdictional issue may arise in a climate change case, requiring a panel to clarify Article XX(b)'s territorial reach and how it may be satisfied. The global impact of the climate change problem may be sufficient, however, to find any local nexus that may be needed.¹⁵⁶

To find necessity, the Appellate Body has articulated a test that includes weighing and balancing of “the relevant factors” with an examination of less trade-restrictive alternatives. Under this process, the panel (1) considers “the importance of the interests or values at stake, the extent of the contribution to the achievement to the measure’s objective, and its trade restrictiveness,” and (2) if the panel preliminarily finds necessity, “confirms” this conclusion “by comparing the measure with possible alternatives that may be less trade restrictive while providing an equivalent contribution to the achievement of the objective.”¹⁵⁷ The comparison “should be carried out in the light of the importance of the interests or values at stake.”¹⁵⁸

The WTO Appellate Body has stated that the more vital or important the value being pursued, the easier it would be to find that the chosen measure is necessary to achieve the chosen level of health protection.¹⁵⁹ The measure does not need to be shown to be indispensable, but, under recent WTO jurisprudence, it must be “apt to produce a material contribution to the achievement

¹⁵⁶ In *European Communities—Tariff Preferences for Developing Countries*, the European Communities (EC) argued that special tariff preferences for countries combating drug production and trafficking could be justified under Article XX(b) on the ground that they were necessary to protect human life and health in the EC by supporting measures in drug-producing and trafficking countries that would reduce the supply of drugs into the EC. The panel was willing to examine whether EC health protection was a policy objective under the program, but was unable to find official evidence of this objective. Panel Report, *European Communities—Tariff Preferences for Developing Countries*, paras. 7.180-7.183 7.201, WT/DS246/R (December 1, 2003). In *United States—Import Prohibition of Certain Shrimp and Shrimp Products (U.S. Shrimp)*, the Appellate Body specifically did not address whether there is an implied jurisdictional limitation in Article XX(g), but did find that, because the sea turtles which the challenged statute sought to protect were known to occur in waters under U.S. jurisdiction, there was a “sufficient nexus” between the endangered marine species at issue and the United States for purposes of the exception. Appellate Body Report, *United States—Import Prohibition of Certain Shrimp and Shrimp Products*, para. 133, WT/DS58/AB/R (October 12, 1998) (hereinafter, U.S. Shrimp AB Report).

¹⁵⁷ Appellate Body Report, *Brazil—Measures Affecting Imports of Retreaded Tyres*, para. 178 (December 3, 2007) (hereinafter, Brazil Tyres AB Report).

¹⁵⁸ *Id.*

¹⁵⁹ Appellate Body Report, *Korea—Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, para. 162. WT/DS161/AB/R, WT/DS169/R (December 11, 2000); see also EC Asbestos AB Report, *supra* note 146, at para. 172.

of its objective”; in other words, a measure providing a “marginal or insignificant” contribution would not be considered necessary to achieve the stated goal.¹⁶⁰ Immediate impact of the measure need not be shown, the WTO Appellate Body having recognized that solving complex environmental problems may require a range of interacting measures and that “the results from certain actions—for instance, measures adopted in order to attenuate global warming and climate change ...—can only be evaluated with the benefit of time.”¹⁶¹ A higher level of contribution to achieving the stated goal may be needed where the measure is particularly restrictive, as is the case with an import ban.¹⁶² It would be up to the complaining Member in a dispute to identify possible alternative measures; if it does so, the defending Member would be able to rebut such suggestions on the grounds that the alternative inadequately contributes to the goal or is not reasonably available for this purpose.

Article XX(g)

For Article XX(g) to apply to a GATT-inconsistent climate change measure, the WTO Member would need to show (1) that conservation of an exhaustible natural resource is at issue; (2) that the measure relates to conservation of this resource; and (3) that the measure is made effective in conjunction with restrictions on domestic consumption or production. In *United States—Import Prohibition of Certain Shrimp and Shrimp Products (U.S. Shrimp)*, the WTO Appellate Body took a broad view of exhaustibility in light of evolving multilateral agreement and action in the conservation area since the adoption of the GATT in 1947 and found that the Article XX(g) applies not only to exhaustible mineral or other non-living natural resources, but also to all exhaustible resources, whether living or non-living.¹⁶³ Since the renewability of a resource would not preclude it from falling within the scope of the exception,¹⁶⁴ the exhaustible resource at issue in the climate change context might be the atmosphere at a suitable temperature or a species adversely affected by rising global temperatures. As with Article XX(b), however, the jurisdictional reach of the provision may need to be addressed, with similar considerations coming into play.¹⁶⁵

For a measure to “relate to” the conservation of exhaustible natural resources, it must be “primarily aimed at” this goal.¹⁶⁶ As articulated in *U.S. Shrimp*, this test requires a “substantial relationship” between “the general structure and the design of the measure ... and the policy goal it purports to serve,” a situation also characterized as “a close and genuine relationship of ends and means.”¹⁶⁷ The relationship of a climate change measure to the claimed conservation goal is key, thus requiring a focus on how the measure would prevent carbon leakage and therefore conserve the earlier-identified natural resources. Evolving studies on the prevention of leakage

¹⁶⁰ Brazil Tyres AB Report, *supra* note 157, paras. 150-151.

¹⁶¹ *Id.* para. 151. The level of contribution of a measure can be demonstrated, for example, by evidence or data relating to the past or present or “quantitative projections in the future, or qualitative reasoning based on a set of hypotheses that are tested and supported by sufficient evidence.” *Id.* See also U.S.-Gasoline AB Report, *supra* note 151, at 21.

¹⁶² Brazil Tyres AB Report, *supra* note 157, para. 210.

¹⁶³ U.S. Shrimp AB Report, *supra* note 156, paras. 127-131.

¹⁶⁴ *Id.* at para. 128. See also *Panel Report, United States—Standards for Reformulated and Conventional Gasoline*, para. 6.37 WT/DS2.R (January 29, 1996) (a policy to reduce the depletion of clean air found to be a policy to conserve a natural resource for purposes of Article XX(g)).

¹⁶⁵ See *supra* note 156 and accompanying text.

¹⁶⁶ E.g., U.S. Gasoline AB Report, *supra* note 155, at 21.

¹⁶⁷ U.S. Shrimp AB Report, *supra* note 156, paras. 136-37.

may, however, present problems in this regard. Even though the WTO Appellate Body has indicated that the immediate effect of a GATT-inconsistent climate change measure may not need to be established in order to successfully invoke a GATT exception, the existence of credible studies questioning whether leakage would be prevented by such measures may increase the difficulty of showing that the program is primarily aimed at preserving the natural resource or resources shown to be at risk.

To show that the measure is made effective in conjunction with restrictions on domestic consumption or production, a panel would examine whether the restriction on the imported product is imposed with respect to the same domestic items and whether the restriction, while not needing to provide true equality of treatment between the two,¹⁶⁸ is “even-handed” in its approach to imports *vis à vis* the restriction placed on domestic goods.¹⁶⁹ The existence of “even-handedness” may become an issue to the extent that H.R. 2454 permits border measures to apply to “manufactured items for consumption” or the imported counterparts of items produced by industrial sectors that did not initially qualify for the receipt of emission allowances under the statute.

Article XX “chapeau”

The Article XX “chapeau,” which is aimed at preventing abuse of the Article XX exceptions, focuses on how the GATT-inconsistent measure is applied. In the view of the WTO Appellate Body, interpreting and applying the proviso is a “delicate” task of finding “a line of equilibrium” between the right of a Member to invoke an Article XX exception and the rights of other Members under GATT substantive obligations; the line moves “as the kind and the shape of the measures at stake vary and as the facts making up specific cases differ.”¹⁷⁰ In a 2007 case, *Brazil—Measures Affecting Imports of Retreaded Tyres (Brazil Tyres)*, the WTO Appellate Body examined earlier cases in which it has applied the proviso and determined that the common mode of analysis in cases involving arbitrary or unjustifiable discrimination involved a determination as to whether the discrimination “had a legitimate cause or rationale in light of the objectives listed in the paragraphs of Article XX.”¹⁷¹ The second element of the proviso has been the subject of less jurisprudence, but it appears to be agreed upon that the prohibition on creating a “disguised trade restriction” is aimed at avoiding a protectionist effect.

Unjustifiable discrimination was found to arise in two aspects of the U.S. pollution reduction program at issue in *United States—Standards for Reformulated and Conventional Gasoline (U.S. Gasoline)*, a case challenging the application of a statutory baseline to foreign refiners in assessing whether imported gasoline met Clean Air Act standards, while more favorable individual baselines were applied to their U.S. counterparts. First, the United States had failed to engage affected exporting countries in exploring cooperative arrangements to mitigate administrative difficulties that the United States claimed would exist in acquiring foreign data for

¹⁶⁸ U.S. Gasoline AB Report, *supra* note 155, at 21.

¹⁶⁹ U.S. Shrimp AB Report, *supra* note 156, paras. 143-144.

¹⁷⁰ *Id.* paras. 158-59. In considering the U.S. restriction on shrimp caught with methods harmful to sea turtles, the Appellate Body stated that its analysis of the proviso would be colored by the preambular language to the WTO Agreement, which conditioned the trade objectives originally set out in the GATT with the following statement: “... while allowing for the optimal use of the world’s resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development.”

¹⁷¹ Brazil Tyres AB Report, *supra* note 157, para. 225.

verification and assessment purposes if individual foreign baselines were used.¹⁷² Second, the United States had taken into account burdensome costs that would be placed on domestic refineries if they too were subject to the statutory baseline, but had not considered costs that would be incurred by foreign firms under the program.¹⁷³

In *U.S. Shrimp*, the Appellate Body found unjustifiable discrimination in the “intended and actual coercive effect” on foreign government policy decisions of the U.S. program prohibiting the importation of shrimp from countries not certified by the United States as maintaining a regulatory program and an incidental taking rate of sea turtles comparable to that of the United States or having a fishing environment that did not pose a threat to sea turtles.¹⁷⁴ According to the Appellate Body, the United States had implemented the statute to require that exporting countries adopt a regulatory program with policies and enforcement practices that were “not merely comparable, but rather *essentially the same*,” as the program applied to U.S. shrimp trawlers, and in some cases, to prohibit the importation of shrimp caught with methods identical to those employed in the United States because the shrimp were harvested in waters of countries not certified by the United States as using acceptable techniques.¹⁷⁵ The Appellate Body stated that discrimination results “not only when countries are differently treated, but also when the application of the measure at issue does not allow for any inquiry into the appropriateness of the regulatory program for the conditions prevailing in those exporting countries.”¹⁷⁶

As in *U.S. Gasoline*, the Appellate Body in *U.S. Shrimp* also found unjustifiable discrimination in the failure of the United States to engage affected WTO Members diplomatically—here, “serious across-the-board negotiations with the objective of concluding bilateral or multilateral agreements for the protection and conservation of sea turtles”—before enforcing the import prohibition on shrimp against these countries.¹⁷⁷ Actual conclusion of an international agreement is not required, however, so long as “serious, good faith efforts” are made to negotiate an accord.¹⁷⁸

The Appellate Body has also indicated that it will look at the length of the phase-in period for foreign compliance with a regulatory program, both as to compliance burdens resulting from a relatively short period and any differences in treatment between affected countries.¹⁷⁹

Arbitrary discrimination may likewise result from placing a “single, rigid, unbending requirement” on foreign countries under a regulatory program, as well as from not according agency officials sufficient flexibility in making determinations under it.¹⁸⁰ The Appellate Body looked for flexibility in implementation, stating that where market access is conditioned on an exporting Member adopting a regulatory program that is “comparable in effectiveness” to that of the importing Member, the exporting Member will have “sufficient latitude ... with respect to the

¹⁷² U.S. Gasoline AB Report, *supra* note 155, at 26-28.

¹⁷³ *Id.* at 28.

¹⁷⁴ U.S. Shrimp AB Report, *supra* note 156, para. 161.

¹⁷⁵ *Id.* (emphasis in original).

¹⁷⁶ *Id.* para. 165.

¹⁷⁷ *Id.* paras 166-172.

¹⁷⁸ U.S. Shrimp (Article 21.5) AB Report, *supra* note 149, para. 134.

¹⁷⁹ U.S. Shrimp AB Report, *supra* note 156, paras 173-174.

¹⁸⁰ *Id.* para. 177.

programme it may adopt to achieve the level of effectiveness required” and may thus adopt a program that is “suitable to the specific condition prevailing in its territory.”¹⁸¹

Avoiding arbitrary discrimination has also been found to implicate due process concerns, and thus, where a statute requires that exporting countries fulfill certain conditions before their exports are permitted entry into the United States, the accompanying regulatory process should be “transparent” and “predictable” and should not be *ex parte*, that is, conducted only with input from the importing Member’s agencies and officials.¹⁸² Instead, the importing Member should give affected exporting countries an opportunity to explain their situation to agency decision-makers, and provide them with a reasoned explanation for denial of requests and petitions, as well as procedures for review of any such denials.¹⁸³

Determining whether a disguised restriction on international trade exists involves focusing not on the restriction *per se*, but rather on what it may mask. Since this portion of the Article XX proviso is also aimed at avoiding abuse and illegitimate use of the Article XX exceptions, the Appellate Body has found that a restriction that formally meets the requirements of an exception “will constitute an abuse if such compliance is in fact only a disguise to conceal the pursuit of trade-restrictive objectives.”¹⁸⁴ Because the aim of a measure “may not be easily ascertained . . . the protective application of a measure can most often be discerned from its design, architecture, and revealing structure.”¹⁸⁵ While the Appellate Body has indicated that the same considerations that are used to determine if discrimination exists may be used to find a disguised trade restriction,¹⁸⁶ a subsequent WTO panel chose not to examine whether discrimination existed for this portion of the proviso where discrimination had not already been found. Instead, it focused on possible protectionist objectives of the measure and the extent to which it had benefited a domestic industry to the detriment of foreign producers.¹⁸⁷

Given these cases, were the IRA program found to violate U.S. GATT obligations but the program was found to fall within the scope of a GATT general exception, the United States would seemingly need to address issues such as the following to show that the program was applied consistently with the Article XX proviso: (1) engagement of trading partners for the purpose of negotiating a bilateral or multilateral solution both to the GHG-reduction goal and addressing the use of border measures to remedy the competitiveness concerns that lead to leakage and administrative problems that may arise in implementing the border measure program, particularly in regard to the use of foreign data; (2) use of a flexible regulatory standard under which the Member permits comparability in the effectiveness of foreign programs in achieving the importing Member’s policy goal; (3) creation of a regulatory process that gives exporting Members a meaningful opportunity to be heard and to resolve problems and deficiencies in seeking and obtaining access to the importing Member’s market; (4) providing an adequate phase-in period before import requirements enter into effect; and (5) permitting the importation of

¹⁸¹ *Id.* para. 144.

¹⁸² *Id.* para. 180.

¹⁸³ *Id.* paras 178-83.

¹⁸⁴ Panel Report, *European Communities—Measures Affecting Asbestos and Asbestos-Containing Products*, para. 8.236, WT/DS135/R (September 18, 2000) (hereinafter, EC Asbestos Panel Report).

¹⁸⁵ *Id.*

¹⁸⁶ U.S. Gasoline AB Report, *supra* note 155, at 25.

¹⁸⁷ EC Asbestos Panel Report, *supra* note 184, paras. 8.237-8.239.

goods that in fact comply with the requirements of the regulatory program, thus avoiding overly broad regulatory categories that may result in penalizing such compliance.

As discussed earlier, the negotiating objectives under Part IV, Subpart 2 include seeking both multilateral GHG-reduction commitments and provisions permitting parties to remedy competitive imbalances that lead to leakage. Additionally, however, seeking data cooperation agreements may also be important in that the regulatory program may rely heavily on foreign emissions and production statistics. The avoidance of arbitrary or unjustifiable discrimination may depend on the quality of such data where they are used to assess emissions-reduction activity in order to determine whether and to what extent border adjustment apply, as well as to distinguish between countries “where the same conditions prevail.” Arguably, even though modeling may potentially be used under the legislation to produce otherwise unobtainable hard data, a general lack of usable emissions data may raise questions as to whether the border requirement may be applied in a nondiscriminatory fashion in all cases for purposes of Article XX.

Further, even assuming that reliable foreign data existed, problems may nevertheless arise in obtaining it. In the absence of a WTO agreement, such as the WTO Antidumping Agreement and the Agreement on Subsidies and Countervailing Measures (under which WTO Members have agreed that they or their exporters will provide information to authorities of the importing Member for investigatory or regulatory purposes), exporting countries and their firms may be reluctant to provide emissions or production data to EPA for purposes of making comparability or other determinations under the IRA program. Unlike the situation in *U.S. Gasoline*, where the quality of the imported gasoline directly affected the quality of the atmosphere within the United States, the carbon-intensive and energy-intensive goods that would be subject to IRA requirements would not themselves be environmentally harmful within U.S. territory. In such case, foreign entities may arguably feel less compelled to produce data than they would in a situation where their products clearly contributed to a problem within the sovereign jurisdiction of the United States.

The issue of penalizing compliant imports may arise where the importing country measures the comparability of a foreign program by determining an average national emissions rate, bases the required amount of border emission credits for an imported product on this average, and subjects all such goods originating in the country to the same requirement, regardless of actual GHG gases emitted in their production. Other issues are likely to arise where import requirements are based on GHG emissions, for example, accurately determining the level of emissions attributable to production of goods occurring in multiple countries under a variety of production processes. In addition, the extent to which a border program covers imported goods that are downstream from the type of products that are produced by domestically capped manufacturers or by initially eligible industrial sectors could be a factor in examining whether the program is applied in a manner that constitutes a disguised restriction on international trade.

Appendix. EC List of Eligible Industries

1. At the NACE-4 level

1.1. Based on the quantitative criteria set out in paragraphs 15 and 16 of Article 10a of Directive 2003/87/EC

NACE Code	Description
1010	Mining and agglomeration of hard coal
1430	Mining of chemical and fertilizer minerals
1597	Manufacture of malt
1711	Preparation and spinning of cotton-type fibres
1810	Manufacture of leather clothes
2310	Manufacture of coke oven products
2413	Manufacture of other inorganic basic chemicals
2414	Manufacture of other organic basic chemicals
2415	Manufacture of fertilizers and nitrogen compounds
2417	Manufacture of synthetic rubber in primary forms
2710	Manufacture of basic iron and steel and of ferro-alloys
2731	Cold drawing
2742	Aluminium production
2744	Copper production
2745	Other non-ferrous metal production
2931	Manufacture of agricultural tractors

1.2. Based on the quantitative criteria set out in paragraph 15 of Article 10a of Directive 2003/87/EC

NACE Code	Description
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1562	Manufacture of starches and starch products
1583	Manufacture of sugar
1595	Manufacture of other non-distilled fermented beverages
1592	Production of ethyl alcohol from fermented materials
2112	Manufacture of paper and paperboard
2320	Manufacture of refined petroleum products
2611	Manufacture of flat glass
2613	Manufacture of hollow glass
2630	Manufacture of ceramic tiles and flags
2721	Manufacture of cast iron tubes
2743	Lead, zinc and tin production

1.3. Based on the quantitative criteria set out in point (a) of Article 10a(16) of Directive 2003/87/EC

NACE Code	Description
2651	Manufacture of cement
2652	Manufacture of lime

1.4. Based on the quantitative criteria set out in point (b) of Article 10a(16) of Directive 2003/87/EC

NACE Code	Description
1110	Extraction of crude petroleum and natural gas
1310	Mining of iron ores
1320	Mining of non-ferrous metal ores, except uranium and thorium ores
1411	Quarrying of ornamental and building stone
1422	Mining of clays and kaolin

1450	Other mining and quarrying n.e.c
1520	Processing and preserving of fish and fish products
1541	Manufacture of crude oils and fats
1591	Manufacture of distilled potable alcoholic beverages
1593	Manufacture of wines
1712	Preparation and spinning of woollen-type fibres
1713	Preparation and spinning of worsted-type fibres
1714	Preparation and spinning of flax-type fibres
1715	Throwing and preparation of silk, including from noils, and throwing and texturing of synthetic or artificial filament yarns
1716	Manufacture of sewing threads
1717	Preparation and spinning of other textile fibres
1721	Cotton-type weaving
1722	Woollen-type weaving
1723	Worsted-type weaving
1724	Silk-type weaving
1725	Other textile weaving
1740	Manufacture of made-up textile articles, except apparel
1751	Manufacture of carpets and rugs
1752	Manufacture of cordage, rope, twine and netting
1753	Manufacture of non-wovens and articles made from non-wovens, except apparel
1754	Manufacture of other textiles n.e.c.
1760	Manufacture of knitted and crocheted fabrics
1771	Manufacture of knitted and crocheted hosiery
1772	Manufacture of knitted and crocheted pullovers, cardigans and similar articles
1821	Manufacture of workwear
1822	Manufacture of other outerwear

1823	Manufacture of underwear
1824	Manufacture of other wearing apparel and accessories n.e.c.
1830	Dressing and dyeing of fur; manufacture of articles of fur
1910	Tanning and dressing of leather
1920	Manufacture of luggage, handbags and the like, saddlery and harness
1930	Manufacture of footwear
2010	Sawmilling and planing of wood; impregnation of wood
2052	Manufacture of articles of cork, straw and plaiting materials
2111	Manufacture of pulp
2124	Manufacture of wallpaper
2215	Other publishing
2330	Processing of nuclear fuel
2412	Manufacture of dyes and pigments
2420	Manufacture of pesticides and other agro-chemical products
2441	Manufacture of basic pharmaceutical products
2442	Manufacture of pharmaceutical preparations
2452	Manufacture of perfumes and toilet preparations
2463	Manufacture of essential oils
2464	Manufacture of photographic chemical material
2465	Manufacture of prepared unrecorded media
2466	Manufacture of other chemical products n.e.c.
2470	Manufacture of man-made fibres
2511	Manufacture of rubber tyres and tubes
2615	Manufacture and processing of other glass, including technical glassware
2621	Manufacture of ceramic household and ornamental articles
2622	Manufacture of ceramic sanitary fixtures

2623	Manufacture of ceramic insulators and insulating fittings
2624	Manufacture of other technical ceramic products
2625	Manufacture of other ceramic products
2626	Manufacture of refractory ceramic products
2681	Production of abrasive products
2722	Manufacture of steel tubes
2741	Precious metals production
2861	Manufacture of cutlery
2862	Manufacture of tools
2874	Manufacture of fasteners, screw machine products, chain and springs
2875	Manufacture of other fabricated metal products n.e.c.
2911	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
2912	Manufacture of pumps and compressors
2913	Manufacture of taps and valves
2914	Manufacture of bearings, gears, gearing and driving elements
2921	Manufacture of furnaces and furnace burners
2923	Manufacture of non-domestic cooling and ventilation equipment
2924	Manufacture of other general purpose machinery n.e.c.
2932	Manufacture of other agricultural and forestry machinery
2941	Manufacture of portable hand held power tools
2942	Manufacture of other metalworking machine tools
2943	Manufacture of other machine tools n.e.c.
2951	Manufacture of machinery for metallurgy
2952	Manufacture of machinery for mining, quarrying and construction
2953	Manufacture of machinery for food, beverage and tobacco processing
2954	Manufacture of machinery for textile, apparel and leather production

2955	Manufacture of machinery for paper and paperboard production
2956	Manufacture of other special purpose machinery n.e.c.
2960	Manufacture of weapons and ammunition
2971	Manufacture of electric domestic appliances
3001	Manufacture of office machinery
3002	Manufacture of computers and other information processing equipment
3110	Manufacture of electric motors, generators and transformers
3120	Manufacture of electricity distribution and control apparatus
3130	Manufacture of insulated wire and cable
3140	Manufacture of accumulators, primary cells and primary batteries
3150	Manufacture of lighting equipment and electric lamps
3162	Manufacture of other electrical equipment n.e.c.
3210	Manufacture of electronic valves and tubes and other electronic components
3220	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
3230	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods
3310	Manufacture of medical and surgical equipment and orthopaedic appliances
3320	Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
3340	Manufacture of optical instruments and photographic equipment
3350	Manufacture of watches and clocks
3511	Building and repairing of ships
3512	Building and repairing of pleasure and sporting boats
3530	Manufacture of aircraft and spacecraft
3541	Manufacture of motorcycles
3542	Manufacture of bicycles
3543	Manufacture of invalid carriages
3550	Manufacture of other transport equipment n.e.c.

3621	Striking of coins
3622	Manufacture of jewellery and related articles n.e.c.
3630	Manufacture of musical instruments
3640	Manufacture of sports goods
3650	Manufacture of games and toys
3661	Manufacture of imitation jewellery
3662	Manufacture of brooms and brushes
3663	Other manufacturing n.e.c.

2. Beyond NACE-4 level based on the quantitative criteria set out in paragraphs 15 and 16 of Article 10a of Directive 2003/87/EC

Prodcom Code	Description
15331427	Concentrated tomato puree and paste
155120	Milk and cream in solid forms
155153	Casein
155154	Lactose and lactose syrup
15891333	Dry bakers' yeast
24111150	Hydrogen (including the production of hydrogen in combination with syngas).
24111160	Nitrogen
24111170	Oxygen
243021	Prepared pigments, opacifiers and colours, vitrifiable enamels and glazes, engobes, liquid lustres and the like; glass frit
24621030	Gelatin and its derivatives; isinglass (excluding casein glues and bone glues)
261411	Slivers, rovings, yarn and chopped strands, of glass fibre
26821400	Artificial graphite, colloidal, semi-colloidal graphite and preparations
26821620	Exfoliated vermiculite, expanded clays, foamed slag and similar expanded mineral materials and mixtures thereof

3. At NACE-4 level based on the qualitative criteria set out in paragraph 17 of Article 10a of Directive 2003/87/EC

NACE Code	Description
1730	Finishing of textiles
2020	Manufacture of veneer sheets; manufacture of plywood, laminboard, particle board, fibre board and other panels and boards
2416	Manufacture of plastics in primary forms
2751	Casting of iron
2753	Casting of light metals

Source: European Commission, *Commission Decision of 24 December 2009 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage* (Brussels: 2009).

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