



GW Law Faculty Publications & Other Works

Faculty Scholarship

2014

Green Subsidies and the WTO

Steve Charnovitz

George Washington University Law School, scharnovitz@law.gwu.edu

Follow this and additional works at: https://scholarship.law.gwu.edu/faculty_publications



Part of the [Law Commons](#)

Recommended Citation

Robert Schuman Centre for Advanced Studies Research Paper No. RSCAS 2014/93

This Article is brought to you for free and open access by the Faculty Scholarship at Scholarly Commons. It has been accepted for inclusion in GW Law Faculty Publications & Other Works by an authorized administrator of Scholarly Commons. For more information, please contact spagel@law.gwu.edu.



European
University
Institute

ROBERT
SCHUMAN
CENTRE FOR
ADVANCED
STUDIES

WORKING PAPERS

RSCAS 2014/93
Robert Schuman Centre for Advanced Studies
Global Governance Programme-129

Green Subsidies and the WTO

Steve Charnovitz

European University Institute
Robert Schuman Centre for Advanced Studies
Global Governance Programme

Green Subsidies and the WTO

Steve Charnovitz

EUI Working Paper **RSCAS** 2014/93

This text may be downloaded only for personal research purposes. Additional reproduction for other purposes, whether in hard copies or electronically, requires the consent of the author(s), editor(s). If cited or quoted, reference should be made to the full name of the author(s), editor(s), the title, the working paper, or other series, the year and the publisher.

ISSN 1028-3625

© Steve Charnovitz, 2014

Printed in Italy, September 2014

European University Institute

Badia Fiesolana

I – 50014 San Domenico di Fiesole (FI)

Italy

www.eui.eu/RSCAS/Publications/

www.eui.eu

cadmus.eui.eu

Robert Schuman Centre for Advanced Studies

The Robert Schuman Centre for Advanced Studies (RSCAS), created in 1992 and directed by Brigid Laffan since September 2013, aims to develop inter-disciplinary and comparative research and to promote work on the major issues facing the process of integration and European society.

The Centre is home to a large post-doctoral programme and hosts major research programmes and projects, and a range of working groups and *ad hoc* initiatives. The research agenda is organised around a set of core themes and is continuously evolving, reflecting the changing agenda of European integration and the expanding membership of the European Union.

Details of the research of the Centre can be found on:

<http://www.eui.eu/RSCAS/Research/>

Research publications take the form of Working Papers, Policy Papers, Distinguished Lectures and books. Most of these are also available on the RSCAS website:

<http://www.eui.eu/RSCAS/Publications/>

The EUI and the RSCAS are not responsible for the opinion expressed by the author(s).

The Global Governance Programme at the EUI

The Global Governance Programme (GGP) is research turned into action. It provides a European setting to conduct research at the highest level and promote synergies between the worlds of research and policy-making, to generate ideas and identify creative and innovative solutions to global challenges.

The GGP comprises three core dimensions: research, policy and training. Diverse global governance issues are investigated in *research* strands and projects coordinated by senior scholars, both from the EUI and from other internationally recognized top institutions. The *policy* dimension is developed throughout the programme, but is highlighted in the GGP High-Level Policy Seminars, which bring together policy-makers and academics at the highest level to discuss issues of current global importance. The Academy of Global Governance (AGG) is a unique executive *training* programme where theory and “real world” experience meet. Young executives, policy makers, diplomats, officials, private sector professionals and junior academics, have the opportunity to meet, share views and debate with leading academics, top-level officials, heads of international organisations and senior executives, on topical issues relating to governance.

For more information:

<http://globalgovernanceprogramme.eui.eu>

Abstract

This paper provides a detailed explanation how the law of the World Trade Organization regulates environmental subsidies with a focus on renewable energy subsidies. The paper begins by discussing the economic justifications for such subsidies and the criticisms of them and then gives examples of different categories of subsidies. Next the paper provides an overview of the relevant WTO rules and caselaw, including the recent Canada -Renewable Energy case. The paper also makes specific recommendations for how WTO law can be improved, and discusses the existing literature discussing reform proposals. The study further finds that because of a lack of clarity in WTO rules, for some clean energy subsidies, a government will not know in advance whether the subsidy is WTO-legal.

Keywords

International trade, international law, environmental protection, climate, subsidies, trade law.

A "green subsidy" is the allocation of public resources for the purpose of improving sustainability over what would otherwise occur via the market. Green subsidies are on the rise throughout the world with the aim of developing clean energy industries, phasing out of fossil fuels, arresting climate change, and promoting sustainable production and consumption. Green subsidies have led to the formation of new epistemic communities who favor such policies, but there has been a pushback by those who question the environmental and budgetary impact of such government spending (Brat & Bjork 2013, p. B4; Constable 2013; Kirwin 2013b).

When a green subsidy causes a transborder economic effect, the disciplines of the world trading system come into play. From its beginning in 1947, the General Agreement on Tariffs and Trade (GATT) contained rules regarding subsidies that distort trade (Kirgis 1972: 909–912; Schwartz & Harper 1972), but the regulatory ambition was vastly expanded in 1995 when the World Trade Organization (WTO) was established with a new Agreement on Subsidies and Countervailing Measures (SCM).¹ According to the WTO Appellate Body, the SCM Agreement states "the conditions under which [WTO] Members may not employ subsidies."² In the past few years, more trade conflicts and disputes over green subsidies have occurred (Cohen 2013, p. A-40; Johnson and Sweet 2013, p. B1; Levine & Walther 2013, p. B-1). Increasingly, there are suggestions that new WTO rules may be needed (Brevetti 2013, p. A-32; Johnson 2013, p. C-1).

The purpose of this study is to assess whether WTO rules should be modernized to provide more policy space for environmental and clean energy subsidies. The study will consider the justification for such subsidies, show ways that green subsidies are being used, provide an overview of the relevant international environmental and economic law, and look at how current WTO rules cabin green subsidies. When problems are identified, the study will propose ways to clarify and improve WTO law so as to maintain policy space and avoid trade disputes. As Aaron Cosbey has aptly pointed out, "the WTO's dispute settlement system is the wrong place to forge international consensus on renewable energy support measures..." (Cosbey 2011).

The study proceeds in six sections: Section I discusses the theoretical justifications for green subsidies and the arguments against them. Section II summarizes and analyzes the ways that green subsidies are used. Section III details how international economic and environmental law governs green subsidies. Section IV maps the policy space for green subsidies available under current WTO law. Section V lays out options for making WTO law more compatible with appropriate environmental subsidies. Section VI draws conclusions.

I. When Are Green Subsidies Justified?³

Unlike environmental policies that operate through regulation, green subsidies are fiscal policies that operate through the market. Such policies may be needed when there is a market failure that can be

* This paper was prepared for the World Bank in 2013. The author thanks the World Bank for supporting this research and Ian Gillson, Tamaro Kane, Sebastian Saez, and Ronald Steenblik for their helpful comments.

¹ This Agreement is administered by the WTO's SCM Committee.

² Appellate Body Report, *United States - Countervailing Duties on Certain Corrosion-Resistant Carbon Steel Flat Products from Germany*, WT/DS213/AB/R, adopted 19 Dec. 2002, para. 73. According to the *Brazil - Aircraft* panel, "the object and purpose of the SCM Agreement is to impose multilateral disciplines on subsidies which distort international trade." Panel Report, *Brazil - Export Financing Programme for Aircraft*, WT/DS46/R, adopted with Appellate Body Report 20 Aug. 2009, para. 7.26.

³ Section I discusses how a government should devise policy to address a *domestic* market failure. Transborder externalities are a different issue because that is a question is how one government should influence the policy actions of another government. Available instruments may include discriminatory taxes and tariffs and subsidies offered to another country. The WTO Secretariat argues that "trade barriers against the [polluting] upwind country can be raised in the hope of dissuading it from continuing to pollute" (World Trade Organization 2006, p. 102).

corrected through an economic intervention. Although market failures abound with regard to the environment, the classic failure is the negative externality from production or consumption. The first-best governmental response to such spillovers will be to internalize the production or consumption externalities through a tax on products, inputs, processes, or emissions, or a through a requirement that polluters purchase a permit (Cromulent Economics Blog 2013; Stewart 2007, p. 151).⁴ The Rio Declaration on Environment and Development endorses this strategy in Principle 16 which calls on national authorities "to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment" (Rio Declaration 1992). For climate-related costs, the most obvious policy instrument to internalize those costs would be a carbon tax.

Although a government could subsidize to prevent negative externalities, that subsidy will typically be a less efficient strategy.⁵ To address efficiency considerations, the Polluter-Pays Principle was developed in the early 1970s as a core environmental norm to dissuade governments from directly paying pollution prevention costs as a substitute for cost internalization (Pearson 1994, p. 580; Gaines 1991; Carroll & Kellow 2011, p. 72).⁶ Thus, the phenomenon of negative externalities does not provide a theoretical justification for using subsidies rather than taxes. By contrast, the WTO Secretariat argues that because a subsidy "can be thought of as a negative tax," both the subsidy and the tax "are a first-best policy" to "the extent that they are both targeted to the emissions."⁷

The situation is different when there are positive externalities to be gained rather than merely negative externalities to be avoided.⁸ Some examples of activities that can generate positive externalities are new technologies and privately provided ecosystem services, such as carbon sinks and flood control. Granting subsidies can be an appropriate government instrument to incentivize behavior that generates positive externalities. Indeed, the United Nations (UN) Environment Programme (UNEP) has declared that "public financing is essential for the transition to a green economy and more than justified by the positive externalities that would be generated" (UN Environment Programme 2011, p. 614). The grant of subsidies to promote innovation can be compared to the grant of intellectual property rights, and policymakers should weight the costs and benefits of each approach versus the other approach.

Besides negative spillovers, the existence of sectoral market failures can be a justification for government intervention. For example, the World Bank has observed market challenges in renewable energy "such as knowledge externalities, latent comparative advantage and increasing returns, information asymmetries, capital market imperfections, and the coordination needed across industries to permit a technological transition" (World Bank 2012, p. 66). Some of these problems are caused by poor macro and microeconomic policies, but others may be inherent to an industry at a particular stage of development. Although the use of a subsidy is not an obvious corrective to something like information asymmetries, a subsidy could make sense to respond to certain challenges such as lack of investment capital. For that problem, one form of subsidy is a government loan at below-market rates.

⁴ Market failures can sometimes also be corrected by individual bargaining following a clear allocation of property rights.

⁵ A subsidy will be less efficient than a tax if the subsidy encourages potential recipients to engage in subsidy-seeking behavior.

⁶ Technically, the Polluter-Pays Principle calls for not subsidizing the costs to firms of complying with new environmental regulations. Yet even over 20 years ago, there was a trend in place to grant subsidies for new technology to achieve pollution control not legally required (OECD 1992). The idea of such technology-push strategies was that lowering the anticipated cost of compliance in advance would make it easier to enact more stringent environmental regulations that would necessitate the need for the new technology.

⁷ World Trade Organization 2006, p. 101.

⁸ Some analysts have suggested that the avoidance of a negative externality, such as a carbon abatement, is a positive externality.

Conceptually, such a loan would be warranted when the social rate of return for an investment exceeds the private rate of return. A so-called "Green Bank" to make such environmentally meritorious investments is often advocated for this purpose (Berlin 2012).

The existence of public goods can also provide a valid reason for a subsidy. Because of free riders, markets are incapable of providing sufficient public goods. A stable climate is a classic public good exhibiting both non-rivalry and non-excludability. Yet energy and environmental policy also includes many quasi-public goods such as an infrastructure to support innovation, waste treatment capacity, and reliable electricity.⁹ An economically rational government would invest in public goods up to the point where the marginal benefits of such expenditures just barely exceed the marginal costs (Ulbrich 2011, p. 107).¹⁰ Of course, total government financing is not necessarily required to secure needed public infrastructure (Schweikart & Folsom 2013, p. A13). Such projects can be privately financed or financed through public-private partnerships.

Because governmental budget constraints will influence the benefit-cost calculus for needed public investment, a rational government would want to zero out governmental expenditures that exacerbate environmental problems. Perversely, governments continue to expend considerable resources for policies that subsidize fossil fuels and wasteful energy consumption, and utilize poor resource management practices.¹¹ According to the World Bank, such counterproductive spending exceeds \$1 trillion per year (World Bank 2012, p. 9). The persistence of government-funded environmental "bads," sometimes called "brown" subsidies, undermines the credibility of a government advocating a green subsidy.¹²

In summary, the policy of government subsidy can be justified in order to obtain public goods and promote outcomes that generate positive environmental externalities. Such subsidies enhance economic welfare. By contrast, the need to undo negative externalities is not a strong argument for a government subsidy because there are more direct instruments (such as taxes) available to correct market failure. But what if a government cannot adopt first-best policies because of government failure?

The Risk of Government Failure

Elected officials and bureaucrats can act against the public interest and such government failure is modeled in theories of public choice. When political economy pressures prevent a government from taking first-best approaches to correct market failures, then a rational government may pursue a second or third-best approach, such as a subsidy, to boost the demand for and supply of environmentally friendly goods.¹³ For example, analysts have also argued that green subsidies can serve as a counterweight to governmental subsidies for climate-unfriendly practices that are politically too hard to remove. In such a situation, however, it would be illogical to credit a government subsidy as cost-effective if the subsidy improves the environment only by (partially) countering government

⁹ According to the WTO Appellate Body, "...fossil energy needs to be replaced progressively if electricity supply is to be guaranteed in the long term." Appellate Body Report, *Canada – Certain Measures Affecting the Renewable Energy Generation Sector, Measures Relating to the Feed-in Tariff Program*, WT/DS412/AB/R, WT/DS626/AB/R, adopted 24 May 2013, para. 5.186.

¹⁰ Note that a government looking only at domestic benefits and costs might underinvest compared with what it would invest if it took into account the full global benefits.

¹¹ For example, Venezuela makes available gasoline to the public at a price of \$0.058 a gallon (Gonzalez 2013, p. A1).

¹² In a brown subsidy, the environmental costs exceed the environmental benefits. For example, economists have found that the U.S. ethanol tax subsidy added to global GHG emissions. U.S. National Research Council 2013, p. 8.

¹³ UNEP has observed that subsidies directed at less or non-polluting activities "are often considered a more practical solution where raising or introducing taxes is seen as politically awkward" (UN Environment Programme 2003, p. 137).

subsidies that worsen the environment. Green subsidies are also advocated to correct the government failure of erratic policymaking unable to credibly commit to future policies (World Bank 2012, p. 67).

Green subsidies are often advocated as short cuts to job creation and economic growth. Several arguments are put forward: One is to claim an economy-wide failure of not generating enough economic growth. As a corrective, many governments advocate green subsidies as a way to strengthen domestic industries. The WTO Secretariat has taken note of such "green competitiveness" policy seeking to "stimulate economic growth, spur job creation and promote exports and diversification" (WTO 2013, p. 249). The green job creation argument has also been adopted up by the International Energy Agency.¹⁴ Still another argument is that green subsidies make polities more secure by increasing energy independence and diversifying supply of energy.

The resurgence of "targeted industrial policies" (see World Bank 2012, p. 67) is a startling development particularly when the world economy is more interlinked now than it was in the prior waves of industrial policy. But the traditional problems underlying industrial policy and managed trade have not been solved—namely, that government failure is likely to trump whatever market failure is remedied (Esty & Charnovitz 2012a, p. 123; Shultz & Becker 2013). Although ideally, smart politicians and bureaucrats could pick winners rather than losers, the more likely result of industrial policy will be the reward of rent-seeking behavior of special interests and the waste of taxpayer dollars (Jenevein 2013; Lomborg 2013, p. A15; Sternberg 2013, p. A13; Strassel 2013, p. A17; Sweet & Tracy 2013, p. B8; Tracy 2013, p. A5; The Economist 2013. Wall Street Journal 2013d, p. A12). The lavish government funding poured into biofuels over the past two decades is one of the most obvious examples.

The popularity of climate policy in the 2010s in high-income countries has generated a robust capital market for carbon-negative technology (including crowd-based funding platforms). This could obviate any need for subsidies to commercial technology, but some experts, such as Michael Levi, argue that many areas of energy are a poor fit for the venture capital model (Levi 2013).¹⁵ To be sure, investors need to be cautious when future government policy is in flux as such uncertainty is an investment constraint. International uncertainty is also an investment constraint and in the field of renewable energy, the risk of foreign export subsidies looms large.

The scarcity of capital in developing countries may point to a need for government lending in those countries or transfers from international agencies and donor countries. In other words, the argument would be that there are green investments that the private sector would rationally make but for the poor overall economic environment. This could be a special justification for green energy programs in developing countries that would not apply to the high-income countries that are the primary users of green subsidies.

The new green industrial policies, which are sector or technology-specific, sometimes also include trade restrictions to tilt the playing field in favor of cosseted domestic green industries. In effect, such trade restrictions are an admission that the green subsidy itself is not likely to be successful unless foreign competitors (who may also be subsidized) are locked out. Such trade restrictions cannot possibly enhance global welfare,¹⁶ and are also dubious policies for any user country because of the

¹⁴ For example, in a paper prepared for the G8 Environment Ministers meeting of 2009, the International Energy Agency observed that because renewable energy technology was not yet cost-effective, government investment in such technology would require more capital and labor for a given amount of output, and that this situation would facilitate job creation in the short run (International Energy Agency 2009, p. 21).

¹⁵ For discussion of whether government should be a venture capitalist, see Galston 2013, p. A13; Wall Street Journal 2013c.

¹⁶ Whether a policy helping one country enhances global welfare may not be easily discernable. One useful analytical tool is to consider whether the world economy would be better off if all countries engaged in that policy. For example, the world economy would probably be better off if all countries subsidized more education up to the point of diminishing returns. But the world economy would be worse off if all countries engaged in more trade protection.

higher costs to domestic consumers and the loss of export opportunities from mimetic foreign practices.

Green trade restrictions can be in the form of tariffs, but the most popular emerging instrument appears to be (discriminatory) local-content requirements (LCRs) linked to new government investments (Hufbauer, Schott, Vieira & Wada 2013; Johnson 2013, pp. 5–6, 11). Such performance requirements are alleged to create value for an economy under certain conditions that could overcome the inefficient allocation of resources (Kuntze & Moerenhout, 2013). A study commissioned by the UN Conference on Trade and Development goes even further by arguing that LCRs can help address "market or policy failures ... whereby multinationals fail to respond to employment and sourcing opportunities available on the domestic market" (WTI Advisors 2013, p. 9). An LCR can also be an instrument to force technology transfer.

In summary, green subsidies are economically justified when public goods are being provided and when there are positive externalities. But this justification is not buttressed by the political economy argument that a government that fails to carry out appropriate environmental policy can make up for it with targeted industrial policy. A subsidy that merely acts to substitute renewable energy for carbon-based energy is not necessarily warranted; its justification depends on the cost and design of the subsidy, and the impact of the tax or borrowing used to pay for the program. A subsidy that gives inefficient producers a leg up over more efficient unsubsidized producers will be inherently counterproductive. For example, the U.S. wind production tax credit can sometimes induce perverse "negative pricing" whereby turbine managers pay reluctant grid operators to take their power just to collect the lucrative tax credits (Garman & Thernstrom 2013, p. A13). Although a particular green subsidy may substitute renewable energy for carbon source energy, calculating the overall environmental and economic effects of such subsidies is a complex task. For example, the production of clean energy itself can cause environmental damage (Lehr 2013, p. A17).

This paper demonstrates how green subsidies, as they are currently being employed, can be illegal under WTO rules when they have a trade distortive design or when they adversely affect the trade interests of WTO Members. This clash is particularly problematic when the green subsidy at issue is an appropriate subsidy as discussed in Section I above. Thus, if a reader believes that green subsidies are *more* justified than indicated in Section I, then the potential clash between WTO rules and environmental policy will loom larger.

II. How Green Subsidies Are Used

Governments use green subsidies for one or more of the following purposes: to enhance public goods, to enhance quasi-public goods such as knowledge-based capital, to redistribute income, to compensate for market failure, and to compensate for government failure. Giving subsidies is generally considered part of the domestic policy space of governments. But governments can jointly agree to a mutual reduction of subsidies as they did in the Uruguay Round agriculture and subsidy negotiations.

Several frameworks have been proposed for how renewable energy or other green subsidies are used.¹⁷ For example, the Organisation for Economic Co-operation and Development (OECD) has developed a sophisticated framework for categorizing renewable energy transfers. Such subsidies may promote consumption of clean energy (termed "market pull") or promote the production of clean energy (termed "technology push"). The OECD framework employs an innovative matrix with the transfer mechanism on the vertical axis and the statutory incidence on the horizontal axis (Bahar, Egeland & Steenblik 2013, pp. 12–13). The transfer mechanism matches some of the categories of subsidy in the SCM Agreement. What the OECD means by statutory incidence is how the transfer gets mediated in the market. For example, there can be a subsidy to land, labor, capital, knowledge,

¹⁷ Another framework is proposed in Ghosh 2012, p. 21.

intermediate inputs, and enterprise income. The OECD matrix is designed to allow for comparisons across sectors, countries, and legal cases.

Another way of classifying environmental subsidies was proposed by the WTO Secretariat (World Trade Organization 2006, p. 103). Four subsidy types are distinguished: Type 1 is a subsidy to reduce environmental externalities, such as pollution, from a firm. Type 2 is a subsidy to promote an external benefit from a firm, such as forestation. Type 3 is a subsidy to defray the cost of compliance with environmental regulation. Type 4 is a subsidy to enhance consumer information about environmental benefits of consuming certain goods. Some overlaps exist, such as between Types 1 and 3. This division seemed a promising basis for a matrix, and it was disappointing that the Secretariat did not make more use of it.

The study herein, with a broader scope than just renewable energy, develops a new taxonomy in Table 1 below that distinguishes subsidies for the purposes of economy-wide investment, government operations, transfers to domestic private actors, and foreign transfers. See Table 1 below:

Table 1: How Governments Carry Out Green Subsidies

Table 1: How Governments Carry Out Green Subsidies		
		Examples
Investment		
	Generally available infrastructure	Smart electricity grid, Water desalinization, Communications infrastructure for telecommuting, Sewage treatment plan, Toxic waste dump
	Fundamental research	US National Labs
	Technology-specific research	USDOE H Prize US ARPA-E
Government Operations		
	Infrastructure for government	Hanford Vitrification Plant
	Procurement	Electric car fleet
Contingent Payments to Domestic Economic Actors		
	Contingent on production of good	EU capital, project, and contingent grants to SMEs for renewable energy equipment Malaysia 15-year tax holiday for solar manufacturers
	Contingent on production of generally available ecosystem services	Mexico Scotel Té payments to farmers for reforestation
	Contingent on non-production of good	Agriculture development rights
	Contingent on exportation or importation of good	US Ex-Im financing for renewable energy equipment
	Contingent on domestic sourcing for goods produced	Ontario's Feed-in Tariff
	Contingent on production or consumption of service	Energy efficiency education programs
	Contingent on outward foreign investment	US OPIC Africa Clean Energy Finance Initiative
	Contingent on consumer purchase of good	Electric vehicle tax credit
Other Transfers to Domestic Economic Actors		

	Technology and other intellectual property	Japan solar panel generator distribution
	Pollution rights	Australia's allocation of free carbon units to assist coal-fired electricity generators in coping with new carbon tax
Transfers to Foreign Countries		
	Transfers to Foreign Companies	US AID Development Credit Authority
	Transfers to Governments	GEF grants through IFC

III. How International Environmental and Economic Law Governs Green Subsidies

Green incentive measures such as those in Table 1 can be analyzed for consistency with public international law. Before discussing WTO rules, this study will first examine the norms of international environmental and energy law as they relate to subsidies and to trade. Although international trade law and international environmental law are separate bodies of law, they are both part of public international law with its canons of interpretation to avoid conflict of law. So in applying WTO law, one needs to consider whether the international environmental regime requires or authorizes green subsidies and what environmental treaties say about international trade.

Although international environmental law is not codified as crisply as international trade law, there are established sources of law that can be examined, such as UN declarations, multilateral environmental agreements (MEAs), and OECD principles (Charnovitz 2010). The Rio Declaration of 1992 may be the most canonical statement of environmental soft law, and its lack of directives to use green subsidies is striking. The U.N. Framework Convention on Climate Change (UNFCCC) of 1992 also lacks specific commitments to implement green subsidies.¹⁸ Of course, this omission may not reflect hostility toward green subsidies, but rather an underlying understanding that governments are able to take autonomous action to subsidize environmental action without the cooperation of other countries. The Kyoto Protocol of 1996 does mention subsidies, but only in a negative way, calling on parties to reduce or phase out fiscal incentives and subsidies that run counter to the objective of the UNFCCC.¹⁹

Environmental law also contains norms regarding the trade effects of environmental measures. The OECD Polluter-Pays Principle (PPP) of 1972 is designed "to encourage rational use of scarce environmental resources and to avoid distortions in international trade and investment...."²⁰ Furthermore, the PPP states that: (1) pollution prevention and control measures "should not be accompanied by subsidies that would create significant distortions in international trade and investment" and (2) "Measures taken to protect the environment should be framed as far as possible in such a manner as to avoid the creation of non-tariff barriers to trade."²¹ In 1974, the OECD fashioned a follow-up PPP Recommendation positing the general rule that governments should not bear the costs

¹⁸ United Nations Framework Convention on Climate Change, 9 May 1992, 1771 UNTS 107.

¹⁹ Kyoto Protocol to the UNFCCC, 10 Dec. 1997, 37 ILM 22 (1998), Art. 2(a)(v).

²⁰ OECD Recommendation, Guiding Principles Concerning International Economic Aspects of Environmental Policies, 26 May 1972, Annex, para. 4.

²¹ *Id.* paras. 4, 9.

of pollution control by conferring subsidies or tax advantages, and further providing that when such assistance is granted, it should be limited to well-defined transitional periods and should not create significant distortions in international trade and investment.²² Similarly, as noted above, the Rio Declaration's Principle 16 encourages the use of economic instruments "without distorting trade and investment." The UNFCCC also contains principles regarding trade impact. Specifically, the Convention states that "Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade."²³

International energy law is much less comprehensive than international environmental law (Fatouros 2007, p. 365). Although the Energy Charter Treaty does not address subsidies, the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects states that parties may provide fiscal or financial incentives to facilitate energy efficient technologies, but "shall strive to do so in a manner that both ensures transparency and minimizes the distortion of international markets."²⁴

In June 2012, the UN Conference on Sustainable Development, known as the Rio+20 Conference, prepared a Report titled "The future we want" which addresses both environmental and trade issues. Although the Report does not call for green subsidies, it "urges governments to create enabling environments that facilitate public and private sector investment in the relevant and needed cleaner energy technologies."²⁵ In addition, the Report reaffirms that "international trade is an engine for development and sustained economic growth" and states that "we remain focused on achieving progress in addressing a set of important issues, such as, *inter alia*, trade distorting subsidies and trade in environmental goods and services."²⁶

Important statements on energy sustainability continue to be made at high-level intergovernmental meetings. For example, in May 2012, the G8 announced: "We also recognize the importance of pursuing and promoting sustainable energy and low carbon policies in order to tackle the global challenge of climate change. To facilitate the trade of energy around the world, we commit to take further steps to remove obstacles to the evolution of global energy infrastructure; to reduce barriers and refrain from discriminatory measures that impede market access;..."(G8 Camp David Declaration 2012, para. 10). In June 2012, G20 Leaders stated "We emphasize the need to structurally transform economies towards a climate-friendly path over the medium term," and "we reaffirm our commitment to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption..." (G20 Leaders Declaration 2012, paras. 71, 74). In addition, the Leaders declared: "Inclusive green growth should not be used to introduce protectionist measures" (G20 Leaders Declaration, paras. 69, 71).

WTO Subsidy Law

This portion of the study examines the relevant WTO law and points out areas of tension with environmental policy. The WTO does not contain an energy chapter. With regard to energy and environmental subsidies, the relevant WTO law is the SCM and Agriculture Agreements. The SCM Agreement disciplines all subsidies. The Agreement on Agriculture limits the use of agricultural

²² OECD Recommendation on the Implementation of the Polluter-Pays Principle, 14 Nov. 1974, para. III(1), (2).

²³ UNFCCC, Art. 3.5.

²⁴ Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects, 17 December 1994, 2080 UNTS 100, Art. 6(3).

²⁵ UN Resolution 66/288, Annex: "The future we want," para. 127.

²⁶ *Id.* para. 281.

subsidies.²⁷ Aside from one precatory provision in the Agreement on Trade-Related Intellectual Property Rights (TRIPS), WTO law does not call for the use of any subsidies.²⁸ Because the SCM Agreement makes illegal the use of so-called "prohibited" subsidies and "actionable" subsidies causing adverse effects, WTO law can encroach on domestic green policy space. Before presenting the details of the SCM Agreement, this study makes two preliminary and interconnected points.

First, the current limits on subsidies in the SCM Agreement do not take into account any policy justification for a subsidy.²⁹ This means that a subsidy justified as economically rational does not get any legal deference reflecting that policy value, even when the subsidy produces positive spillovers that benefit the global community.³⁰ So the fact that a government intervenes in an existing market "to correct market distortions therein"³¹ does not provide a legal excuse to use what would otherwise be illegal under WTO rules.

Back in 1994, the architects of the SCM Agreement did provide a category of "non-actionable" subsidies, but that category terminated at the end of 1999 (Bigdeli 2011). Article 8 on non-actionable subsidies was important because it delineated WTO-permitted policy space for certain subsidies for research and development activities or to promote adaptation of existing facilities to new environmental requirements.³² Such subsidies were notionally shielded from being declared illegal under some circumstances and were not countervailable. Another provision terminated in 1999 had carved out certain subsidies from being deemed to cause so-called "serious prejudice" to other countries. Specifically, a government subsidy to cover operating losses was deemed to cause serious prejudice, but there was a carve-out for one-time subsidies "given merely to provide time for the development of long-term solutions and to avoid acute social problems."³³ This carve-out evidences a one-time recognition by governments that subsidy policy space could be used to provide long-term solutions to social problems.

Second, although this point has not yet been specifically litigated at the WTO, the mainstream view is that the SCM obligations are not subject to a defense offered under the General Exceptions in GATT Article XX (Horlick 2009, p. 194; Condon 2011, p. 926) or Article XIV of the General Agreement on Trade in Services (GATS), or a defense offered in the GATT or GATS Security Exceptions.³⁴ Thus, if a subsidy violates the SCM Agreement, then perforce it will be illegal under WTO law. Of course, this situation does not mean that the General Exceptions are irrelevant for green subsidies. These Exceptions can still come into play as a defense to a violation of trade rules regarding

²⁷ GATT Article XVI (Subsidies) is also part of the WTO law of subsidies, but has largely been superseded by the SCM Agreement. The word "energy" is mentioned only once in the WTO treaty, namely in SCM Footnote 61 regarding inputs consumed in the production process.

²⁸ Article 66.2 of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) calls on WTO Members to "provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base."

²⁹ Note, however, that SCM Article 25 requires each WTO Member to provide an annual notification of its subsidies, including the "policy objective and/or purpose of the subsidy." SCM Art. 25.3(iii).

³⁰ Of course, if all WTO Members see global value in the subsidy being granted by one government, then there may not be any WTO Members willing to lodge a WTO case against that subsidy. WTO rules are not self-enforcing and affected business interests cannot lodge cases at the WTO.

³¹ See Appellate Body Report, *Canada – Renewable Energy/ Feed-in Tariff*, para. 5.188.

³² SCM Art. 8.2(a), (c). There was also a category for assistance to disadvantaged regions. Mexico is credited for pushing to include the environmental component in non-actionable subsidies. See Collins-Williams & Salembier 1996, at 11 (discussing the history of Article 8).

³³ SCM Art. 6.1a(c).

³⁴ Note, however, that the WTO Secretariat has opined that "Article XX in principle would appear to apply to subsidies..." (World Trade Organization 2006, p. 201).

non-discrimination in the granting of subsidies and in the imposition of trade-related investment measures.

Unlike most of the other WTO agreements that contain only a multilateral cause of action, the SCM Agreement provides two-tracks of response to measures of concern. The multilateral track designates certain governmental fiscal practices as illegal under the SCM and provides for a cause of action at the WTO against a government that engages in that practice. In parallel, the unilateral track calls for governments to provide an administrative process under domestic law for seeking a countervailing duty against imports when such imports have benefited from a foreign government's subsidy and importation causes material injury to the domestic import-competing industry.

The Meaning of "Subsidy" in the WTO

Unless a government grants a subsidy as defined by the SCM Agreement, there can be no SCM action taken in either the multilateral track proscribing illegal behavior or the unilateral track empowering domestic remedies. The definition of a subsidy in the SCM Agreement is a broad one, but not every measure that an observer might consider a subsidy³⁵ is covered under SCM. In general, for a subsidy to be found to exist, there must be a *financial contribution* by a government (or public body³⁶) and this contribution must *benefit* the recipient of the subsidy. Measures that generate financial benefit for a recipient via a government regulation (such as an export restriction) are not a subsidy under SCM rules because there is no financial contribution. In other words, the form of instrument used is a pivotal factor in the SCM Agreement, and just because a measure exerts a market effect equivalent to a subsidy does not transmogrify such measure into a subsidy.

The SCM Agreement defines a governmental financial contribution as one listed in the following four subparagraphs of Article 1.1(a)(1):

- i) a direct transfer of funds (e.g., grants, loans and equity infusion) and potential transfers of funds (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 types of functions in (i) to (iii) above which would normally be vested in the government.

The Appellate Body has declared that these four "exhaust the types of government conduct deemed to constitute a financial contribution."³⁷ But government measures beyond those specifically listed can also be a financial contribution provided that they fit within one of the subparagraphs. For example, the Appellate Body has ruled that that a direct transfer of "funds" encompasses not only money, but

³⁵For example, Joseph Stiglitz has opined:

Except in certain limited situations (like agriculture), the WTO does not allow subsidies--obviously, if some country subsidizes its firm, the playing field is not level. A subsidy means that a firm does not pay the full costs of production. Not paying the cost of damage to the environment is a subsidy, just as not paying the full costs of workers would be (Stiglitz 2006, p. 2).

The two examples of "subsidy" given by Stiglitz, not paying the cost of damage to the environment and not paying the full cost of workers, are not subsidies under the SCM Agreement.

³⁶ An entity other than a government can be a public body if it has been bestowed with government authority. Government ownership in itself is not enough to render an entity a public body. Whether government ownership plus control is sufficient has not been clarified in dispute settlement.

³⁷ Appellate Body Report, *United States - Measures Affecting Trade in Large Civil Aircraft* (Second Complaint), WT/DS353/R, adopted, 23 March 2012, para. 613.

also "financial resources and other financial claims more generally."³⁸ The question of whether the allocation of intellectual property rights is a financial contribution has arisen in WTO litigation, but so far this issue has not been resolved.

Important case law exists explicating the SCM Article 1 definitions. The Appellate Body has explained that a panel should categorize a measure by examining its design and operation, and that a transaction may fall under more than one type of financial contribution.³⁹ Another Appellate Body ruling is that the normative benchmark for "otherwise due" taxation will be found in the municipal law of the defendant government.⁴⁰ The meaning of "general infrastructure" has been clarified in recent WTO litigation. According to the *EC and Certain Member States - Large Civil Aircraft* panel, infrastructure is "general" when it "is available to all or nearly all entities" and is not general when it is "provided to or for the use of only a single entity or a limited group of entities."⁴¹ In addition, whether infrastructure qualifies as "general" is decided on a case-by-case basis.⁴²

As an alternative to a financial contribution, the SCM Agreement provides that "any form of income or price support in the sense of Article XVI of GATT 1994" can substitute for a financial contribution in enabling a WTO cause of action. GATT Article XVI addresses a subsidy "which operates directly or indirectly to increase exports ... or to reduce imports of any product...." While circular, the SCM provision appears to say that a measure that might not be a subsidy because it does not confer a financial contribution could still be a subsidy if it operates to raise incomes or prices in a way that affects imports. Given the terms "any form" and "directly or indirectly," the scope for this alternative prong is broad. In my view, the setting of a fixed price would probably be considered a price support whereas a regulation that has an incidental (albeit predictable) effect on prices would probably not be considered a price support. Future caselaw will elaborate this prong.

The test for when a benefit is conferred is whether the financial contribution makes a recipient better off than it otherwise would have been. The existence of such a benefit is determined by assessing whether the recipient has received a financial contribution on terms more favorable than those available to the recipient in the relevant market. When the government gives a grant or foregoes revenue, WTO panels tend to find benefit without much analysis.⁴³ But a panel has a more difficult challenge in determining whether there is a benefit conferred through other fiscal measures because there may be a question of the adequacy of a comparison to a market-based benchmark.

³⁸ Appellate Body Report, *Japan - Countervailing Duties on Dynamic Random Access Memories from Korea*, WT/DS336/AB, adopted 17 Dec. 2007, para. 250. In addition, the Appellate Body held that debt forgiveness can also be a direct transfer of funds. *Id.* para. 252.

³⁹ Appellate Body Report, *Canada - Renewable Energy/ Feed-in Tariff*, para. 5.120.

⁴⁰ Appellate Body Report, *United States - Tax Treatment for "Foreign Sales Corporations"*, Recourse to Article 21.5 of the DSU by the European Communities, WT/DS108/AB/RW, adopted 29 Jan. 2002, para. 89.

⁴¹ Panel Report, *EC and Certain Member States - Large Civil Aircraft*, paras. 7.1036, 7.1039. The panel further suggested that if infrastructure is created for the particular needs of an entity or group that has the right to access or use the infrastructure, then such infrastructure is not properly considered general. *Id.* para. 7.1043.

⁴² *Id.* para. 7.1039.

⁴³ Recipients actively seek grants and tax benefits so one might presume that they would not do so unless that made them better off. Yet few if any government grants or tax benefits are totally unrequited. The recipient typically provides consideration in the form of requested behavior, and so there is a question of whether to offset this cost to the recipient against the financial benefit to the recipient. For example, suppose that the government invites a firm to reduce carbon emissions and then grants the firm a marketable emission credit for doing so. The firm is better off receiving the credit than not receiving it, but there is a legitimate question of whether there is a real benefit to the firm. The Appellate Body has posited that some financial contributions "may involve reciprocal rights and obligations" but inexplicably has proclaimed that grants "will not involve a reciprocal obligation on the part of the recipient." Appellate Body Report, *US - Large Civil Aircraft (Second Complaint)*, para. & and n. 1294.

To ascertain a benefit, WTO judges have borrowed from the SCM guidelines for countervailing duties which explain how to calculate the amount of the benefit. These guidelines, in SCM Article 14, provide:

(a) equity capital shall not be considered as conferring a benefit, unless the investment decision can be regarded as inconsistent with the usual investment practice (including for the provision of risk capital) of private investors in the territory of that Member;

(b) a loan by a government shall not be considered as conferring a benefit, unless there is a difference between the amount that the firm receiving the loan pays on the government loan and the amount the firm would pay on a comparable commercial loan which the firm could actually obtain on the market;

(c) a loan guarantee by a government shall not be considered as conferring a benefit, unless there is a difference between the amount that the firm receiving the guarantee pays on a loan guaranteed by the government and the amount that the firm would pay on a comparable commercial loan absent the government guarantee;

(d) the provision of goods or services or purchase of goods by a government shall not be considered as conferring a benefit unless the provision is made for less than adequate remuneration, or the purchase is made for more than adequate remuneration. The adequacy of remuneration shall be determined in relation to prevailing market conditions for the good or service in question in the country of provision or purchase.

These guidelines are initially applied with respect to the marketplace of the defendant country, but if in Article 14(d), a government's predominant role in providing goods and services distorts the market so that in-country prices are unreliable, then an out-of-country market can be used as a substitute benchmark.

One difficult issue that has arisen in case law is whether a benefit to an enterprise can be extinguished by selling ownership of the enterprise at arms length and at fair market value. For governmental privatizations, the Appellate Body has ruled that there is a rebuttable presumption that a prior benefit ceases to exist.⁴⁴ The Appellate Body has also ruled that the effects of any subsidy can be expected to come to an end with the passage of time.⁴⁵ The case law further suggests that if a subsidized enterprise repays a government subsidy with funds generated by the advantage gained by the subsidy, then no further cause of action is available.⁴⁶

Trade law is unclear as to whether a covered recipient can only be a business. Although the SCM Agreement specifically refers to enterprises, industries, firms, exporters, and producers as possible recipients, the Agreement also uses the broader term of "sources found to be subsidized."⁴⁷ This definitional issue is relevant in considering whether a government transfer to an international financial institution, a foreign government, or a foreign enterprise can be a "subsidy." These issues have not been litigated in WTO dispute settlement so the territorial reach of the SCM Agreement remains unclear.

⁴⁴ Appellate Body Report, *United States – Countervailing Measures Concerning Certain Products from the European Communities*, WT/DS212/AB/R, adopted 8 Jan. 2003, para. 127. For criticism of this line of cases, see Sykes 2010, pp. 510–11.

⁴⁵ Appellate Body Report, *European Communities and Certain Member States – Measures Affecting Trade in Large Civil Aircraft*, WT/DS316/AB/R, adopted 1 June 2011, para. 1238.

⁴⁶ Panel Report, *Australia – Subsidies Provided to Producers and Exporters of Automotive Leather*, Recourse by the United States to Article 21.5 of the DSU, WT/DS126/RW, adopted 11 Feb. 2000, para. 6.28.

⁴⁷ SCM Art. 19.3. See the discussion by the Appellate Body in *United States – Certain EC Products*, para. 112.

The Requirement of Specificity⁴⁸

The SCM Agreement draws a fuzzy line between those subsidies that are specific and those that are not. Under SCM Article 2, subsidies that are specific are those where the granting authority limits access to a subsidy to certain enterprises.⁴⁹ Subsidies that are not specific are those where the granting authority 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.⁵⁰ In-between are subsidies that are notionally not specific, but that can be ruled *de facto specific* depending on an analysis of other factors such as the use of a subsidy by a limited number of enterprises and the manner in which discretion has been exercised by the granting authority in the decision to grant a subsidy.⁵¹ The Appellate Body has explained that SCM Article 2.1 (Specificity) contains principles within an analytical framework in which a single subparagraph may not by itself be determinative.⁵²

A decision by the WTO or a government that specificity exists should be made based on positive evidence. The language of the SCM Agreement suggests that specificity is tested with respect to the ultimate recipient which has to be a firm or set of firms. So while a government payment to a natural person (i.e., an individual) would not itself have specificity, a payment to a natural person linked to a purchase from particular firms would presumably have specificity.

The line between a specific and non-specific subsidy is important because with one exception only specific subsidies are illegal in the multilateral track and countervailable in the unilateral track. In other words, with one exception, the WTO does not provide a cause of action against a generally available subsidy. The one exception is that for the category of "prohibited" subsidies (discussed below), the subsidy is deemed specific and such specificity does not need to be proven with positive evidence. WTO case law suggests that a prohibited subsidy, such as an export subsidy, is likely to be sector or product specific.⁵³ Thus, little policy space is lost by deeming such a subsidy specific rather than requiring a demonstration of specificity.

The SCM Agreement's Multilateral Track

The SCM's multilateral track is provided for in SCM Articles 3-7 and the rules therein make certain subsidies illegal. Two categories, "prohibited subsidies" and "actionable subsidies" causing adverse effects, are laid out in SCM Parts II and III respectively.⁵⁴ The Part II category of "prohibited" subsidy includes: (a) subsidies contingent, in law or fact, upon export performance, or subsidies of the type

⁴⁸ The WTO sometimes demands that applicant countries agree to higher requirements as the price for accession to the WTO. These country-specific rules can trump general WTO law such as the SCM Agreement. For example, China agreed that subsidies provided to state-owned enterprises will be deemed specific under listed conditions. WTO, Accession of the People's Republic of China, WT/L/432, 23 Nov. 2001, para. 10.2.

⁴⁹ For example, if a feed-in-tariff is a subsidy, then giving it only to electricity providers would in my view be specific. Compare Mattoo & Subramanian (2012, p. 1) who argue that such a subsidy is non-specific because the benefits are economy-wide.

⁵⁰ See SCM Art. 2.1(b) Objective criteria mean criteria or conditions 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.

⁵¹ SCM Art. 2.1(c).

⁵² Appellate Body Report, *U.S. – Definitive Anti-Dumping and Countervailing Duties (China)*, WT/DS379/AB/R, adopted 25 March 2011, para. 366.

⁵³ But perhaps not always. There could be a generally available export subsidy, such as currency depreciation, that is WTO-illegal. Whether currency depreciation involves a price support has not been litigated.

⁵⁴ The SCM Agreement does not define either "prohibited" or "actionable" except by example.

proscribed in SCM Annex I (Illustrative List of Export Subsidies),⁵⁵ and (b) subsidies contingent upon the use of domestic over imported goods.⁵⁶ Prohibited subsidies are illegal per se under WTO law without any showing of adverse effects on other countries. A subsidy is contingent in law on export performance if it is geared to induce future export performance by the recipient. A subsidy is contingent in fact if it is granted so as to provide an incentive to the recipient to export in a way that is not simply reflective of conditions of supply and demand in the domestic and export markets undistorted by the granting of the subsidy.⁵⁷

An economic justification for prohibiting export subsidies is that if all countries used them, whatever benefits existing for the users would be cancelled out. In other words, export subsidies are a classic collective action problem. GATT Article XVI explains that granting an export subsidy may have harmful effects for other exporting or importing parties and may hinder the achievement of GATT objectives."⁵⁸ Yet in disciplining export subsidies, the WTO fails to take into account that some countries could gain more from subsidized imports than they would lose from such imports. Indeed, one perceptive study suggested that "governments that choose to subsidize their exporters in the absence of international agreements should be encouraged to subsidize *more* under international agreements, not less" (Janow & Staiger 2003).

SCM Part III covers subsidies that violate the Agreement when those subsidies cause "adverse effects to the interests of other Members."⁵⁹ Because the SCM Agreement uses the term "prohibited" only with respect to the subsidies covered in Part II, the Appellate Body has explained that "actionable subsidies are not prohibited *per se*; rather, they are actionable to the extent they cause adverse effects."⁶⁰ But a subsidy that is not prohibited per se can still be prohibited when it causes the prescribed effects.⁶¹ So for all practical purposes, an "actionable" subsidy can be just as illegal under SCM rules as a "prohibited" subsidy.⁶² Note, however, that actionable subsidies causing adverse effects will not be illegal for developing countries who use domestic subsidies to cover social costs for a limited period of time when directly linked to a privatization program.⁶³

Oddly, the SCM Agreement does not define "actionable" subsidies (Gauthier 2000, p. 180). As a result, an ambiguity exists in the meaning of an actionable subsidy. Two definitional options exist: One is that all specific subsidies are actionable,⁶⁴ meaning merely that action can be brought against them under the WTO. The second option is that a specific subsidy is actionable (and hence illegal) when it causes adverse effects. In its only decision addressing this issue, the Appellate Body can be read to endorse the second option in stating that "actionable subsidies are not prohibited *per se*; rather, they are actionable to the extent they cause adverse effects."⁶⁵

⁵⁵ The export subsidy discipline in Article 3.1(a) does not apply to least developed countries. SCM Art. 27.2.

⁵⁶ The Appellate Body has stated that subsidies contingent on the use of domestic goods can be de jure or de facto.

⁵⁷ Appellate Body Report, *EC and Certain Member States - Large Civil Aircraft*, para. 1102.

⁵⁸ GATT Art. XVI:2.

⁵⁹ SCM Art. 5.

⁶⁰ Appellate Body Report, *United States - Subsidies on Upland Cotton*, Recourse to Article 21.5 of the DSU by Brazil, WT/DS267/AB/RW, para. 238.

⁶¹ Note, however, that the WTO website states: "Actionable subsidies are not prohibited." http://www.wto.org/english/tratop_e/scm_e/subs_e.htm.

⁶² Strictly speaking, SCM Article 5 states that no Member "should" cause adverse effects with a subsidy. But the term "should" has been interpreted to be obligatory, not precatory.

⁶³ SCM Art. 27.13.

⁶⁴ See SCM Agreement, Art. 1.2.

⁶⁵ Appellate Body Report, *United States - Subsidies on Upland Cotton*, Recourse to Article 21.5 of the DSU by Brazil, WT/DS267/AB/RW, para. 238. See also the more specific panel holding quoted below in *United States - Subsidies on Upland Cotton*, para. 7.1383, making the same definitional point.

Commentator take both sides of this debate. For example, Gustavo E. Luengo Hernández de Madrid explains that the category of actionable subsidies includes "those specific subsidies that can be challenged using the WTO dispute settlement system" (Luengo Hernández de Madrid 2007, p. 166). Mitsuo Matsushita, Thomas J. Schoenbaum, and Petros C. Mavroidis write that "Actionable subsidies are defined by default: all government schemes which qualify as subsidies, and which are neither prohibited nor non-actionable, are, in principle, actionable subsidies" (Matsushita, Schoenbaum & Mavroidis 2006, p. 360). On the other hand, Peter Van den Bossche (now on the Appellate Body) writes that "Unlike subsidies and import substitution subsidies, most subsidies are not prohibited but are 'actionable', i.e., they are subject to challenge in the event that they cause adverse effects on the interests of another Member" (Van den Bossche 2008, p. 577). And according to the WTO's *Dictionary of Trade Policy Terms*, subsidies "may be actionable, and therefore illegal, if they cause injury to the domestic industry of another member, negate other commitments under the GATT, or cause serious prejudice to the interests of another member" (Goode 2007, p. 4).

In this paper, the term "actionable" will be used in the narrower sense (first option) to mean a specific subsidy that can be challenged at the WTO and if adverse effects are shown, then such a subsidy will be declared an SCM Part III violation. This definition is consistent with the meaning of non-actionable (the opposite of actionable); a non-actionable subsidy is exempt from SCM Parts III and V.⁶⁶

"Adverse effects" in actionable subsidies is defined in SCM Article 5. Adverse effects include injury to the domestic industry of another Member and serious prejudice.⁶⁷ Serious prejudice under SCM Article 5(c) occurs when the subsidy has a displacing, impeding or price-cutting effect on the export interests of a WTO member. The precise rule is spelled out in SCM Article 6. According to one WTO panel, SCM "Article 6.3 does not attempt to define any qualitative or quantitative aspects of the subsidy: its effects-based focus embraces a subsidy of any nature that has the adverse effects enumerated and is therefore 'actionable.'"⁶⁸

The legal significance for a government of providing a specific subsidy that causes adverse effects is that this subsidy violates the SCM Agreement.⁶⁹ Certainly, not every specific subsidy will cause adverse effects.⁷⁰ As one WTO panel has explained, "A fundamental tenet of the subsidy disciplines enshrined in the *SCM Agreement* is that Members are permitted to grant or maintain specific subsidies to the extent that they do not cause adverse effects within the meaning of Articles 5 and 6 of the *SCM Agreement*."⁷¹ Conversely, WTO Members are not permitted to grant specific subsidies that *do* cause such adverse effects.

Both types of subsidies, that is export subsidies and domestic (or internal) subsidies, can have parallel transborder effects. For example, Country A's export subsidy and its domestic subsidy can detrimentally impact export-seeking Country B. Relatedly, both Country A's export subsidy and its domestic subsidy can cause trade injury to import-competing Country C. A complaining government may lodge both prohibited and actionable claims against the same subsidy.

⁶⁶ See SCM Agreement, Footnote 35 and the discussion below.

⁶⁷ See SCM Arts. 5. Adverse effects can also occur when there is nullification or impairment of benefits from impaired market expectations, but this abstract cause of action is not covered in this study

⁶⁸ WTO Panel Report, *United States – Subsidies on Upland Cotton*, WT/DS267/R, adopted with Appellate Body Report, 21 March 2005, para. 7.1383.

⁶⁹ Some analysts argue that the adverse effects are violative of the SCM Agreement, not the subsidy itself. For example, Professor Marc Benitah has written that SCM Article 5 does not stipulate subsidizing "behavior" that is "illegal," but instead stipulates that "some consequences of this behavior are a cause for action...." (Benitah 2001, p. 31).

⁷⁰ WTO Panel Report, *United States – Upland Cotton*, para. 7.1179, n. 1299 ("Logically, there must be some specific subsidies that do not cause such adverse effects.").

⁷¹ *Id.*

Table 2 below summarizes the various causes of action against WTO-inconsistent subsidies:

Table 2: Overview of the SCM Agreement's Disciplines on WTO-Inconsistent Subsidies			
SCM Cause of Action	SCM Rule	Required Market Effect to Gain Cause of Action	How Market Effect Is Shown
Prohibited export subsidy	Art. 3.1(a)	None	
Prohibited local content subsidy	Art. 3.1(b)	None	
Actionable domestic subsidy	Art. 5(a)	Adverse effects to the interests of other Members	Injury to domestic industry of another Member producing a like product to the imported product
Actionable domestic subsidy	Art. 5(c), Art. 6.3	Adverse effects to the interests of other Members	Serious prejudice to the interests of another Member as shown when: ---6.3(a). The effect of the subsidy is to displace or impede the imports of a like product of another Member into the market of the subsidizing Member; --6.3(b). The effect of the subsidy is to displace or impede the exports of a like product of another Member from a third country market; --6.3(c). The effect of the subsidy is a significant price undercutting by the subsidized product as compared with the price of a like product of another Member in the same market or significant price suppression, price depression or lost sales in the same market. --6.3(d). The effect of the subsidy is an increase in the world market share of the subsidizing Member in a particular subsidized primary product of commodity as compared to the average share it had during the previous period of three years and this increase follows a consistent trend over a period when subsidies have been granted.

One issue not addressed in Table 2 is the Illustrative List of Export Subsidies laid out in SCM Annex I. Although many items on the list have little relevance to green subsidies, one should be noted. Item K prohibits export credits at rates below those that the government has to pay for the funds, but provides a safe haven for export credit practices that are in conformity with the OECD Arrangement on Officially Supported Export Credits (Soprano 2010, pp. 626–32). The current OECD Arrangement

has some "sector understandings," including one on Renewable Energies and Water Projects (Bahar, Egeland & Steenblik 2013, pp. 49–50).

The remedy for a subsidy found to be illegal in WTO dispute settlement depends on the subsidy category. For the prohibited subsidies contingent on export or domestic content, the only prescribed remedy is to withdraw the subsidy without delay.⁷² For actionable subsidies causing adverse effects, the prescribed remedy is to remove the adverse effects or to withdraw the subsidy.⁷³ The scope for remedies other than withdrawing the subsidy is limited however. A government could eliminate some adverse effects by forbidding the export of subsidized products, but such a remedy would violate WTO rules against quantitative restrictions.⁷⁴ Moreover, such action could not eliminate the adverse effects of the subsidy in the domestic market of the subsidizing government. The only solution I am aware of is for a government to match its domestic subsidies with subsidies to foreign competitors. The unlikelihood of this scenario demonstrates that practically speaking, the option of removing adverse effects is not an alternative to withdrawing the subsidy. Note, however, that a defendant government seeking to avoid withdrawing a subsidy need only remove the adverse effects on the competitors in the complaining country.⁷⁵ But if such a situation ensues, other WTO Member governments could lodge parallel complaints.

The SCM Agreement's Unilateral Track

The unilateral track in SCM Part V allows a government to engage in self-help by responding to commercial injury from importing the subsidized product by imposing a countervailing duty (CVD) on the imported product.⁷⁶ A countervailing duty is "a special duty levied for the purpose of offsetting any subsidy bestowed directly or indirectly upon the manufacture, production or export of any merchandise...".⁷⁷ CVDs can be assessed only on imported products and only after an investigation has shown the existence of a subsidy, specificity, material injury to the domestic industry producing the like product to the import, and a causal link between the import and the injury.⁷⁸ A government's CVD investigation is typically initiated by an application from or on behalf of the import-competing domestic industry. WTO Member governments are not required to impose CVDs, but are seemingly required to initiate investigations when validly requested to do so.⁷⁹ CVDs are to be terminated not later than five years unless there is a finding that allowing the duty to expire would lead to a continuation of subsidization and injury. A CVD proceeding may be terminated if the investigating government accepts an "undertaking" offered by the foreign exporter to revise its prices or by the exporting country government to eliminate the subsidy or take other measures concerning its effects.

The economic justification for a CVD has always been questioned. That is because the imposition of a CVD leads to a transfer from consumers to the import competing industry. The likely effect of the CVD would be to lower the national economic welfare of the country using that remedy (Sykes 2005,

⁷² SCM Art. 4.7. In one case, the panel asserted that withdraw meant to claw back the subsidy, but in other cases, WTO jurists seem to be interpreting withdraw to mean ceasing to provide the subsidy.

⁷³ SCM Art. 7.8. Some commentators argue that because the remedy of withdrawing the subsidy is not absolutely required, then such a subsidy is not technically illegal because a government would be free to retain the subsidy and merely excise its adverse effects. In my view, such subsidy surgery will often be impractical.

⁷⁴ In particular, GATT Art. XI and the Safeguards Agreement, Art. 11.

⁷⁵ WTO Arbitration Report, *United States – Tax Treatment for "Foreign Sales Corporations"*, Recourse to Arbitration by the United States under DSU Article 22.6/SCM Article 4.11, WT/DS108/ARB, 30 Aug. 2002, para. 5.40 n. 66 (last sentence).

⁷⁶ CVDs can be brought against subsidies addressed in both Parts II and III of the SCM Agreement.

⁷⁷ SCM Footnote 36.

⁷⁸ SCM Art. 15.1 An imported product can also be countervailed if it contains an input whose production was subsidized.

⁷⁹ SCM Arts. 11.1, 19.2.

p. 103; World Trade Organization 2006, p. 202). CVDs can also have negative environmental effects by increasing the price of environmental goods (Sweet 2012, p. B1; Swedish National Board of Trade 2013).

Although the SCM Agreement sets numerous requirements for using a CVD, no requirement exists to show an economy-wide gain from the CVD, or an economy-wide injury from the import. The only way in which the SCM Agreement recognizes the counterproductive nature of the CVD is in Art. 19 which urges Members to adopt procedures in which domestic authorities can take into account representations from domestic parties whose interests might be adversely affected by a CVD.⁸⁰ A government could take into account environmental interests in deciding whether to impose a CVD (Swedish National Board of Trade 2013, p. 11), but I am not aware of any national laws that do so. Although a rational government would not lodge a WTO case unless it thought that the lawsuit could make it better off, governments do not exercise such discretion in deciding whether to launch a CVD investigation because the SCM Agreement, in effect, delegates the initiation of such cases to the affected domestic industry. Thus, under current SCM law, a government could reflexively impose a CVD against subsidized green imports even though the government would prefer not to do so.

Interplay of the Two Remedy Tracks

Although the multilateral and unilateral tracks have different causes of action and different remedies, one should not forget that both tracks respond to the same underlying foreign governmental behavior, that is, subsidization. The interplay of the two tracks can be summarized as follows: Anything that would be countervailable in the unilateral track is illegal in the multilateral track.⁸¹ But much of the illegal behavior in the multilateral track is not susceptible to a domestic remedy in the unilateral track. A government that considers its trade interests infringed by a foreign subsidy can use both tracks at the same time subject to the SCM Agreement provision preventing a double remedy in certain circumstances.⁸² The multi-faceted disciplinary role of SCM is illustrated below: Table 3 shows how SCM rules protect trade interests. Table 4 shows how SCM rules impede trade interests. Both Tables show the overlap of the two tracks:

⁸⁰ SCM Art. 19.2. But the investigating authority is not required to invite comments regarding the public interest. By contrast, the WTO Agreement on Safeguards requires investigating authorities to allow interested parties to submit their view on whether a safeguard would be in the "public interest." Agreement on Safeguards, Art. 3.1.

⁸¹ A countervailable subsidy is illegal under SCM Article 5(a). Because of the existence of the unilateral CVD remedy, governments rarely bring a case under SCM Article 5(a), and so far there have been no findings of a violation of that provision.

⁸² SCM Footnote 35 first sentence.

Table 3: How SCM Rules Protect Trade Interests		
Trade Interest	Multilateral Track	Unilateral Track
Competing in subsidizing foreign government's domestic market	Art. 3.1(b), 5(c) and 6.3(a), (b), (c)	
Competing in internal market against subsidized imported good	Art. 5(a)	Art. 19.1
Competing in third country (or world) market against subsidized good in world trade	Arts. 3.1(a), 5(c) and 6.3(b), (c), (d)	

Table 4: How SCM Rules Impede Trade Interests		
Trade Interest	Multilateral Track	Unilateral Track
Receiving a subsidy for domestic production or consumption	Arts. 3.1(b), Arts. 5(c) and 6.3(a), (b), (c)	
Importing subsidized goods	Arts. 3.1(a), 5(c) and 6.3(c)	Art. 19.1
Exporting subsidized goods	Arts. 3.1(a), 5(a), 5(c) and 6.3(b), (c), 6.3(d)	Art. 19.1

In Tables 3 and 4, CVDs are included both as a remedy against unfair competition and a constraint on commercial importers (or consumers) in the market of the government using the CVD.

Non-Actionable Subsidies in SCM Agreement Part IV

The importance of the SCM Article 8 "non-actionable" subsidy category (now expired⁸³) can be further explicated after the above discussion of the SCM disciplines.⁸⁴ Subsidies provided for the following purposes were non-actionable between 1995–99:

- (a) assistance for research activities conducted by firms or by higher education or research establishments on a contract basis with firms if: the assistance covers not more than 75 per cent of the costs of industrial research or 50 per cent of the costs of pre-competitive development activity and provided that such assistance is limited exclusively to:
 - (i) costs of personnel (researchers, technicians and other supporting staff employed exclusively in the research activity);
 - (ii) costs of instruments, equipment, land and buildings used exclusively and permanently (except when disposed of on a commercial basis) for the research activity;
 - (iii) costs of consultancy and equivalent services used exclusively for the research activity, including bought-in research, technical knowledge, patents, etc.;

⁸³ See SCM Art. 31.

⁸⁴ The term "non-actionable" is not defined in the SCM Agreement, but SCM Footnote 35 states that "the provisions of Parts III and V shall not be invoked regarding measures considered non-actionable in accordance with the provisions of Part IV." This suggests that non-actionable status was not a defense in SCM Part III litigation, but rather grounds for dismissing a WTO case brought under Part III or a CVD action brought under Part V.

- (iv) additional overhead costs incurred directly as a result of the research activity;
- (v) other running costs (such as those of materials, supplies and the like), incurred directly as a result of the research activity.
- (b) assistance to disadvantaged regions within the territory of a Member given pursuant to a general framework of regional development and non-specific (within the meaning of Article 2) within eligible regions provided that listed conditions were met;
- (c) 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, provided that the assistance:
 - (i) is a one-time non-recurring measure; and
 - (ii) is limited to 20 per cent of the cost of adaptation; and
 - (iii) does not cover the cost of replacing and operating the assisted investment, which must be fully borne by firms; and
 - (iv) is directly linked to and proportionate to a firm's planned reduction of nuisances and pollution, and does not cover any manufacturing cost savings which may be achieved; and
 - (v) is available to all firms which can adopt the new equipment and/or production processes.⁸⁵

This policy space was not a complete safe harbor, however, as there was a possibility of raising a concern about "serious adverse" trade effects to the SCM Committee which in principle could authorize countermeasures.⁸⁶ Part IV also required governments to notify to the SCM Committee any subsidies for which Part IV is invoked and provided a right to other governments to request information about those programs with the assistance of the Committee and the WTO Secretariat.⁸⁷ Such transparency provisions are vital to maintain the integrity of any green subsidy space provided by the WTO.

If Article 8 were still enabled, the carve-out for non-actionable subsidies would have provided a partial solution to challenge of accommodating green subsidies under WTO rules. Table 5 below shows the prior legal effect of Article 8:

⁸⁵ SCM Art. 8.2 (internal footnotes omitted).

⁸⁶ SCM Art. 9. SCM Article 9.4, which was never utilized, suggests that the SCM Committee could have authorized countermeasures without consensus. Part III also provided for binding arbitration on the question of whether a government's subsidy met the SCM Part III conditions for being a non-actionable subsidy. See SCM Art. 8.5 and Procedures for Arbitration under Article 8.5 of the SCM Agreement, WTO Doc. G/SCM/19, 10 June 1998, para. 34.

⁸⁷ SCM Arts. 8.3, 8.4.

Table 5: Legal Effect of the Non-Actionable Subsidy Rule (before expiration)		
Multilateral Track	Unilateral Track	Impact of Article 8
Prohibited export subsidy Art. 3.1(a)		None, still illegal
Prohibited domestic content subsidy Art. 3.1(b)		None, still illegal
Actionable subsidy injuring an industry. Art. 5(a)		Legalized under certain conditions
Actionable subsidy causing serious prejudice in trade. Art. 5(c), Art. 6.3		Legalized under certain conditions
	Countervailable subsidy injuring an industry, SCM Part V	Not countervailable

Because Article 8 contained numerous vague conditions, the sheltering scope of Article 8 was uncharted. Although ongoing trade talks have not yet proved fruitful, the issue of the status of non-actionable subsidies remains on the Doha Round agenda.⁸⁸

Using the conceptual and definitional material above, my study proceeds to analyze how world trade law limits opportunities for governments to use subsidies. In Section IV below, I will discuss the status of various green subsidies under current SCM law. Then, in Section V, I turn to options for improving WTO law to make it more compatible with environmental needs.

IV. Mapping the WTO Policy Space for Green Subsidies

Having explained the relevant WTO rules, this paper now maps out the policy space available for governments to use green subsidies.⁸⁹ To preview the conclusion, the analysis demonstrates that while there is considerable policy space to address market failure and provide environmental public goods, WTO rules can encroach upon green subsidies to a considerable degree by making some of them illegal.⁹⁰ This situation is problematic because it can lead to more trade-and-environment disputes

⁸⁸ WTO Doha Ministerial, Implementation-related issues and concerns, WT/MIN(01)17, 20 Nov. 2001, para. 10.2.

⁸⁹ Sadeq Bigdeli has developed a table of Domestic Regulatory Space for "Green" Energy Subsidies under the Existing SCM Framework (Bigdeli 2011, pp. 3. n. 1, 24).

⁹⁰ Other analysts have reached similar conclusions: According to Andrew Green, SCM rules "have the potential to significantly constrain countries' ability to use subsidies legitimately to address climate change..." (Green 2006, p. 404). According to Sadeq Bigdeli, "The serious vulnerability of RE [renewable energy] under the ASCM and the high chances of trade disputes imply that the WTO imposes considerable limitations on RE promotion policies, particularly on the way they are devised by its Members" (Bigdeli 2009, p. 188). According to Daniel Peat, "*Corrective* government subsidies (ie those that aim to correct market failure) may be deemed illegal under WTO rules, even if they increase the net social benefit" (Peat 2012, p. 6). According to Luca Rubini, "the current WTO subsidy disciplines are not, on balance, favorable to governmental autonomy to adopt and design subsidies supporting renewable energy that may be desirable..." (Rubini 2012, pp. 554–55). According to James Bacchus, "Unfortunately, in almost every part of the world, the only practical

between countries and because law-abiding governments may refrain from using legitimate environmental measures that could have generated positive environmental outcomes domestically and for the global economy.

Consider two possible responses to this study's thesis that a real problem exists if some useful green subsidies are potentially WTO-illegal. One response would be to point out that despite WTO rules, governments seeking to employ subsidies are not letting potential future WTO legal liability empty out their green toolbox. While that may be true in some situations, WTO Members still profess to honor WTO rules and no national representative to the WTO has ever publicly stated that governments should get a free pass to ignore WTO rules for environmental reasons. So the normativity of WTO rules remains intact.⁹¹ Another response might be to draw inspiration from Bishop Berkeley and argue that if a measure infringes WTO law, but no government brings a case, then there is no law violation.⁹² But that is cold comfort for a law-abiding government who will not know *ex ante* whether its green subsidy will be challenged in WTO dispute settlement.

To map out how WTO rules affect the policy space available for green subsidies, Part IV divides all subsidies into three baskets: those that are WTO-legal, those that are illegal, and those that have an ambiguous legal status. To symbolize these three baskets, this paper employs a three-color topography of Mint,⁹³ Red, and Grey. The Mint measures are lawful under SCM rules. Red measures are unlawful. Grey measures can be lawful or unlawful depending on future interpretations of WTO rules and the economic effects of specific measures in the relevant markets. In many ways, the gray measures are the most problematic because legal uncertainty may chill needed public and private investments. A matrix with these three categories appears in Table 6 below:

(Contd.) _____

alternative for producing renewable energy competitively seems to be subsidies, and these cannot succeed so long as WTO rules make them illegal under international law" (Bacchus 2012). According to Paolo D. Farah and Elena Cima, "the Panel and Appellate Body have interpreted rules in a quite restrictive way, so as to not leave much space to States' policies in favor of renewables" (Farah & Cima 2013, p. 718).

On the other hand, some analysts have expressed doubt about such legal constraints: According to Magnus Lodefalk and Mark Storey, "We have analyzed whether trade-related climate measures are compatible with WTO rules on subsidies. Generally, we conclude that the SCM Agreement does not obstruct or seriously circumscribe the use of such measures" (Lodefalk & Storey 2005, p. 44).

The WTO Secretariat takes both sides: "Provided certain basic disciplines are respected, the [SCM] agreement leaves members with policy space for, among other things, supporting the deployment and diffusion of green technologies" (World Trade Organization 2011, p. 4).

⁹¹ A recent study conducted at the OECD concluded: "Ensuring that domestic-incentive policies are compatible with WTO subsidy rules is just as important for renewable-energy technologies and fuels as it is for other goods" (Bahar, Egeland & Steenblik 2013, p. 23).

⁹² No WTO cases have been initiated against green subsidies other than subsidies linked to forced localization requirements. Back in 2001, WTO Member governments urged themselves "to exercise due restraint" in challenging developing country subsidies aimed at "legitimate development goals" such as the "development and implementation of environmentally sound methods of production...." WTO Doha Ministerial, Implementation-related issues and concerns, WT/MIN(01)17, 20 Nov. 2001, para. 10.2.

⁹³ This study employs the term "mint" as a substitute for green because of the confusion that would result by the duplicative use of green. Mint works as a term because it has dictionary definitions of affirmation such as "good," "nice," "cool," and "smashing." See <http://www.urbandictionary.com/define.php?term=mint>.

Table 6: Tripartite Matrix of Policy Space for Green Subsidies under SCM Rules	
Mint	Payment for ecosystem services Government procurement at market prices Government expenditure on general infrastructure such as a power grid Energy and climate research conducted by a government Renewable energy portfolio regulation Government-funded technology prize awarded competitively Government subsidy to service providers
Grey	Income or price support for environmental purposes Setting of FIT contract prices Interest rates in Green Bank lending Technology and sector specific subsidies Energy and climate research funded by a government but conducted independently Assistance for research activities conducted by firms for industrial research or pre-competitive development activity Grant of marketable emission allowances or other intangibles Assistance to promote adaptation of existing facilities to new environmental requirements Subsidies to foreign countries linked to exporting country content requirement (tied aid) Subsidy to subnational governments linked to buy-domestic requirements Subsidy allegedly causing adverse effects on other countries (allegedly actionable subsidies)
Red	Export subsidy Subsidy linked to domestic content requirements

The tripartite matrix covers all green subsidies, including countervailable subsidies, which, as noted above, are illegal too. But the unilateral remedy of a CVD deserves special attention because the cause of action is typically lodged by an industry in the importing country and the first-order impact is on enterprises in the exporting country. A government granting an environmental subsidy will worry about its own WTO liability, but may not care much about a CVD being imposed on its subsidy to a domestic recipient who chooses to export to other countries. In discussing the problem arising from CVDs against environmental subsidies, this paper focuses on the interests of the importing country, rather than the interests of the exporting, subsidizing country.

Mint Space

Mint environmental subsidies, permitted by SCM rules, can be grouped in the following ways:

- subsidy-like measures removed from the SCM Agreement's definition of a subsidy,
- subsidies that are de jure not specific,
- subsidies that are de jure legal, and
- some special cases.

The largest category are measures that may operate in the market like a subsidy, but nevertheless fall outside the definition of SCM subsidies and therefore cannot possibly be SCM-illegal. Numerous types exist: First, a government's purchase of environmental or ecosystem services lies outside the definition of a financial contribution, and, therefore, is not a subsidy. An example is compensation paid to farmers or landowners for maintaining their land's ability to provide ecosystem services (World Bank 2012, p. 23). Second, and relatedly, the government can purchase an environmental right, such as a conservation easement, and the purchase of rights (as opposed to the granting of rights) is not a financial contribution. Third, the government may purchase environmental goods for its own use with adequate remuneration, and that will not be a subsidy.⁹⁴ For example, California may purchase a fleet of electric cars without, by that act alone, be subsidizing the electric car industry. Fourth, governmental provision of general infrastructure falls outside of a financial contribution. This carve-out provides important policy space to governments to spend money on major projects that will not constitute a financial contribution even though they do benefit particular enterprises (Bankes, Boute, Charnovitz, Hsu, McCall, Rivers & Whitsitt 2013, pp. 298–300). The exact scope of this carve-out will be defined in future WTO litigation, but "general infrastructure" may be copious enough to include a smart power grid, a fiber optic grid, satellites, nuclear waste facilities, carbon capture and storage facilities, geoengineering, and automobile plug-in stations. Such expenditures will not be considered a subsidy. Fifth, the government may conduct energy or climate research in national labs and the research itself would not be a subsidy even though the results could benefit industry.⁹⁵ Sixth, if the jurisdictional reach of the SCM Agreement extends only to the national level, then a government contribution to an intergovernmental agency would not be considered an SCM subsidy.⁹⁶ More clearly, the allocation of funds by international agencies or international financial institutions (e.g., the IMF or the International Renewable Energy Agency) will exist outside of the SCM's jurisdiction. Finally, the government can impose a command and control regulation benefiting a specific industry, and because the instrument of a regulation is used, that action will not be considered a financial contribution.⁹⁷ For example, the government can mandate greater automotive fuel economy or use of smart meters without thereby giving a financial contribution to automotive or smart meter producers.

Sector-specific regulation was a key issue in the leading WTO dispute on green subsidies, the case against Canada on measures affecting renewable energy generation. At issue were public contracts by the Ontario government that are long-term purchase agreements for electricity from solar and wind sources, with the contract demanding local content requirements (LCRs).⁹⁸ Canada did not contest that the contract payments were financial contributions under the SCM Agreement, but instead argued that the contracts did not provide a benefit to the electricity generators. At the first level of review, the panel concluded that the complainants had failed to establish the conferral of a benefit. The Appellate Body reversed the panel on this point, but did not decide whether a benefit is being conferred.

In reaching this outcome, the Appellate Body held that a regulation providing for more solar and wind power did not, in itself, confer a benefit to the wind and solar panel industries. After noting that a

⁹⁴ But note that the question of whether a government purchase of services is a financial contribution has not yet been decided. Indeed, in the one case that it came up, the appellators vacated the panel's conclusion that a government's purchase of services is excluded from SCM Article 1. Appellate Body Report, *US - Large Civil Aircraft (Second Complaint)*, para. 620.

⁹⁵ Based on my own analysis. Of course, if the government purchases goods to do the research, those purchases could be subsidies depending on the financial terms of the purchase.

⁹⁶ The SCM Agreement includes as a "financial contribution" payments to a "funding mechanism," but in my view the World Bank would not be considered such a funding mechanism because the Bank carries out intergovernmental functions rather than the type of functions that would normally be vested in a government. See SCM Art. 1.1(a)(1)(iv).

⁹⁷ See Panel Report, *United States - Measures Treating Export Restraints as Subsidies*, WT/DS/94/R, adopted 23 Aug. 2001.

⁹⁸ Although domestic content requirement is a more accurate term than a local content requirement, this study follows the trend in the literature to refer to such measures as LCRs.

government may choose a blended source of electricity or may require distributors to source part of their electricity from certain specified technologies, the Appellate Body stated that "in both instances, the definition of a certain supply-mix by the government cannot in and of itself be considered as conferring a benefit" under the SCM Agreement.⁹⁹ The explanation given by the Appellate Body was that "Where a government creates a market, it cannot be said that the government intervention distorts the market, as there would not be a market if the government had not created it."¹⁰⁰ This conclusion is important because it broadens the legal defenses for governments using regulation to favor a particular industry (e.g., various countries' renewable energy portfolio standards).

The next category of mint measures is subsidies that are not specific and therefore not illegal. As noted above, specificity shall not exist when the granting authority has automatic, objective criteria governing eligibility. A subsidy without specificity could be generally available, such as wage support or retraining programs. But a non-generally available subsidy, such as a financial award to the winner of a technology prize, could also qualify as non-specific.¹⁰¹ For example, consider a prize for breakthrough solutions for energy storage.

Unless a specific subsidy is prohibited per se, illegality will depend on whether the subsidy causes adverse effects. Since the analysis of adverse effects will always be fact-dependent, many specific subsidies will be gray measures. Nevertheless, some exceptions exist. One is a government subsidy to an enterprise that sells only services. Since there are no products involved, such a subsidy cannot cause adverse effects and therefore cannot violate the SCM.¹⁰² Another exception occurs with the cause of action for serious prejudice based on displacing or impeding an export. Such a cause of action would be negated when there is a failure to conform to standards or other regulatory requirements in the importing country.¹⁰³

A special case of possible mint policy space exists with governmental payments listed in the so-called Green Box in the WTO Agreement on Agriculture.¹⁰⁴ In general, Green Box subsidies are exempt from the domestic support commitments in the Agriculture Agreement. During the original nine-year implementation period of the Agriculture Agreement (the so-called Peace Clause), such government payments were also exempt from SCM disciplines. That exemption has now expired, and therefore such agricultural subsidies are nominally subject to SCM rules. Nevertheless, no SCM cases have been filed against such subsidies, perhaps because of a continuing informal peace. Measures in the Green Box must meet one of the listed policy-specific criteria, and two are environment-related: research in connection with environmental programs and payments for environmental or conservation programs.¹⁰⁵ Qualifying environmental payments need to be dependent on the fulfillment of specific conditions, including conditions related to production methods and inputs. For example, a payment could be linked to the use of renewable energy.

Another special case is the reduction or elimination of environmentally bad subsidies (so called "brown" subsidies). Although adding disciplines on fishery subsidies continues to be negotiated in the Doha Round, at present WTO law does not forbid brown subsidies. But if one is seeking to define the mint policy space available for governments to promote better environmental outcomes, that space includes many opportunities to rechannel financial resources from brown subsidies to green

⁹⁹ Appellate Body Report, *Canada – Renewable Energy/ Feed-in Tariff*, para. 5.175.

¹⁰⁰ *Id.* para. 5.188. *See also* paras. 5.190, 5.227.

¹⁰¹ If a governmental prize combines a non-specific subsidy with an LCR, such as the US Halogen prize, the result is a prohibited domestic content subsidy. Esty & Charnovitz 2012b.

¹⁰² *See* SCM Arts. 5, 6. Note that the GATS has no multilateral disciplines on granting a subsidy to services. *See* Art. XV. But subsidies to services or service providers are subject to GATS rules on non-discrimination.

¹⁰³ SCM Art. 6.7(f) & footnote 18.

¹⁰⁴ If such measures are not mint, then they are grey because their legal status depends upon their economic effect.

¹⁰⁵ Agreement on Agriculture, Art. 7.1 & Annex 2, paras. 2(a), 12.

subsidies.¹⁰⁶ Ron Steenblik has put forward proposals for how to negotiate reductions in fossil fuel subsidies (Steenblik 2010, pp. 183–92).

Red Space

The red space comprises the subsidies that cannot be used legally used even if they improve the environment. Two types of red measures exist de jure: export subsidies and import substitution subsidies. An export subsidy is a subsidy contingent upon export performance in law or in fact.¹⁰⁷ Such subsidies are illegal ("prohibited") without a showing of specificity. An import substitution subsidy is a subsidy contingent upon the use of domestic over imported goods.¹⁰⁸ Such requirements can refer to goods of national origin or to goods sourced locally such as the Canadian FIT measure which requires goods-value-added in the Province of Ontario. Note that in addition to being illegal under the SCM Agreement, a domestic content requirement linked to a subsidy will also violate the national treatment rule in GATT Article III.¹⁰⁹

LCR requirements linked (or unlinked) to subsidies are typically employed by a government as an instrument of industrial policy to underwrite product development and manufacturing within a favored industry. Although the SCM Agreement prohibits an LCR linked to a subsidy, WTO law as a whole is hardly hostile to industrial policy. Indeed, the WTO reserves a great deal of policy space for sectoral protectionist measures such as tariffs, discriminatory public procurement, and market access restrictions on the importation of services.¹¹⁰ Such measures will routinely cause adverse effects on other countries.

An actionable subsidy causing adverse effects is also a red measure in that it is SCM-illegal. Nevertheless, because whether a specific subsidy is illegal depends on its economic effects, such subsidies will be treated as grey space measures and discussed below.

Grey Space

The grey measures are subsidies with an unclear status in WTO law. Measures can be grey either because WTO law is ambiguous or because legal status depends upon a measure's actual economic effects. Many of the most popular green subsidies are grey measures. Even 19 years after the enactment of WTO subsidy law, several core legal concepts have not received much explication in case law.

Trade law is not clear as to whether subsidies given to entities outside the territory of the subsidizing government are covered by the Agreement.¹¹¹ This issue is important in considering whether financial transfers to foreign recipients come within the SCM's scope. Textually, SCM Article 1 seems to suggest that only infra-territorial subsidies are covered; the exact language is "a financial

¹⁰⁶ On a global scale, the cost of brown subsidies may be about six times the cost of green subsidies.

¹⁰⁷ SCM Art. 3.1(a). Subsidies illustrated in SCM Annex I are also prohibited.

¹⁰⁸ SCM Art. 3.1(b).

¹⁰⁹ See GATT Arts. III:4, III:5. If GATT Article III is violated, that would also lead to a violation of Article 2.1 of the WTO Agreement on Trade Related Investment Measures (TRIMS). For both TRIMS and the GATT, a government employing a LCR would be able to try to use the General Exceptions in GATT Article XX as a defense.

¹¹⁰ See GATT Arts. II, XVIII:2, III:8(a), III:8(b), XXI(b)(iii), XVIII:2, XVIII:22; GATS Art. XVI:2. See Evenett 2013 for documentation of growing protectionism.

¹¹¹ In one case, the panel assumed that the benefit could be conferred exclusively in respect of production outside the territory of the Member providing the financial contribution. Panel Report, *United States - Tax Treatment for "Foreign Sales Corporations*, Recourse to Article 21.5 of the DSU by the European Communities, WT/DS108/RW, adopted with Appellate Body Report, 29 Jan. 2002, para. 8.63.

contribution by a government or any public body within the territory of a Member...."¹¹² This interpretation is buttressed by the definition of specificity which refers to a subsidy "specific to an enterprise or industry or group of enterprises or industries (referred to in this Agreement as "certain enterprises") within the jurisdiction of the granting authority...."¹¹³ On the other hand, perhaps what the SCM Article 1 definition means is that the public body needs to be within the territory of the Member, but there is no geographic limit on where the subsidy goes. This issue has not been litigated in the WTO dispute settlement system, but the WTO Secretariat has opined that the SCM Agreement would appear not to be applicable to official development assistance benefiting firms in other countries (World Trade Organization 2006, p. 54).

This legal uncertainty can complicate green subsidies. For example, what is the SCM status of a financial transfer from WTO Member A to WTO Member B tied to purchases by B of A's green products? Or a financial transfer from WTO Member A to a producer in B contingent on purchase of A's goods? One answer might be that if A's subsidy to exportation by its domestic solar panel producers is illegal, then illegality should also attach to A's subsidy to B's enterprises to import solar panels from A.¹¹⁴ But there would be a threshold question of whether the jurisdictional scope of SCM disciplines stretches across borders. One WTO panel suggested that "it is unlikely that any tied aid for truly humanitarian purposes would be challenged under the SCM Agreement as a prohibited subsidy."¹¹⁵ Yet what would happen with tied aid for environmental rather than humanitarian purposes? The status of international tied aid is further complicated by the OECD Arrangement on official export credits which appears to permit tied aid on commercial terms (La Chimia & Arrowsmith 2009, pp. 721-27).

WTO rules are also unclear as to whether a sovereign subnational entity can be a recipient under SCM Article 1.¹¹⁶ Should a grant from the central government to a local government be considered a subsidy, then such transfers would have to conform with SCM rules, including rules against LCRs. Such buy-national requirements are in wide use for projects such as urban transit (Murphy 2013, p. B1).

Another legal uncertainty exists with the SCM Article 1 definition of a financial contribution. For example, what is the SCM status of government provision to consumers of weatherization services or of government grants to consumers for environmental purposes? The question of whether a recipient can be a non-enterprise has not been fully litigated, but there have been subsidy cases involving producers as intermediate purchasers.¹¹⁷ In my view, a payment to an individual can be a WTO-covered subsidy,¹¹⁸ even a social safety net payment. Similarly, a transfer in-kind of a good or service

¹¹² SCM Art. 1.1(a)(1).

¹¹³ SCM Art. 2.1.

¹¹⁴ Similarly, if A's subsidy to its domestic producers contingent upon the use of domestic goods is illegal, then illegality should also attach to A's subsidy to B's producers contingent on the purchase of domestically produced goods from A. For a discussion, see Luengo Hernández de Madrid 2007, pp. 106–07.

¹¹⁵ Panel Report, *Canada – Measures Affecting the Export of Civilian Aircraft*, Recourse by Brazil to Article 21.5 of the DSU, WT/DS70, RW, adopted with Appellate Body Report, 20 Aug. 1999, para. 5.118 n. 102.

¹¹⁶ In the *Boeing* case, a WTO panel found that a grant from the U.S. Department of Labor to a community college in Washington State was a subsidy. Panel Report, *United States – Measures Affecting Trade in Large Civil Aircraft* (Second Complaint), WT/DS353/R, adopted with Appellate Body report, 23 March 2012, para. 7.1375.

¹¹⁷ For example, *Canada – Renewable Energy/ Feed in Tariff*, *U.S. – Upland Cotton*, and *Canada – Autos*. Also, as noted above, in the *Boeing* case, WTO jurists held that a public community college was a subsidy recipient under the SCM Agreement.

¹¹⁸ The WTO Secretariat has ambiguously opined that "transfers to consumers may not be covered" under the SCM Agreement. World Trade Organization 2006, p. 54.

to an individual can be a subsidy. Of course, such payments would not violate the SCM Agreement unless they have specificity and cause adverse effects.¹¹⁹

The status of a government transfer in the form of an intangible right has received some explication in emerging WTO case law. Many intangibles have marketable value as allocations (e.g., electromagnetic spectrum, airport landing rights, and fishing rights) or as property (e.g., air rights). In connection with a direct transfer of funds in SCM Article 1.1(a)(1)(i), the Appellate Body has averred that measures with "sufficient characteristics in common" with the transactions listed in that provision would fall within the concept of a direct transfer of funds.¹²⁰ Indeed, in the *Japan - DRAMS* case, the Appellate Body ruled that a direct transfer of funds encompasses not only money, but also "financial resources and other financial claims more generally."¹²¹ For the provision of goods and services, the Appellate Body has viewed this concept elastically too. For example, in the *U.S. - Softwood Lumber* case, the Appellate Body recognized that a subsidy may be conferred "not only through monetary transfers, but also by the provision of non-monetary inputs."¹²² In that case, the appellators held that when Canada provided a right to harvest standing timber, this non-monetary resource was a good because it was a right to a tangible, fungible input material.¹²³ In the *EC - Large Civil Aircraft* case, the Appellate Body viewed a land lease, a sale of land, and the right to use an airport runway as instances of the provision of goods or services.¹²⁴ Most recently, in the *US - Large Civil Aircraft* case, the Appellate Body ruled that when the U.S. government gave Boeing access to government facilities, equipment, and employees, that constituted a provision of goods or services.¹²⁵

Rights to intangibles will loom important in the climate field. The question of whether a government-issued emission allowance would be a subsidy has been debated (Maruyama 2011, p. 718; Low, Marceau & Reinaud 2012, pp. 528–29).¹²⁶ While such a grant does not clearly come within the SCM's definition of a financial contribution, the emerging WTO jurisprudence discussed above suggests that it would be so included. This conclusion is further buttressed by prudential considerations, namely, that excluding such a grant from SCM coverage would open a huge hole in the disciplines (Hufbauer, Charnovitz & Kim 2009, pp. 61–63).

Yet another legal uncertainty is the meaning of "income or price support" which can substitute for a financial contribution establishing an SCM subsidy. Green regulations are not financial contributions, but could still get entangled by the SCM Agreement as an income or price support. In the WTO Feed-in-Tariff decision, there was an issue of whether Ontario's policy of setting a high price in paying for electricity from renewable energy was an "income or price support."¹²⁷ For procedural reasons, the Appellate Body did not analyze that issue. But this and similar questions about income and price

¹¹⁹ In my view, a subsidy to a natural person consumer contingent on an LCR would be covered by the SCM Agreement and prohibited by Article 3. But if such a subsidy were not covered by SCM, it would still be illegal under GATT Article III:4.

¹²⁰ Appellate Body Report, *US - Large Civil Aircraft (Second Complaint)*, para. 624.

¹²¹ Appellate Body Report, *Japan - DRAMS (Korea)*, para. 250.

¹²² Appellate Body Report, *United States – Final Countervailing Duty Determination with Respect to Certain Softwood Lumber from Canada* [Softwood Lumber IV], WT/DS257/AB/R, adopted 17 Feb. 2004, para. 64.

¹²³ Appellate Body Report, *US – Softwood Lumber IV*, para. 66. The Appellate Body explained that trees severable from land could be a good, but the Appellate Body did not address whether the land itself could be a good or a service. *Id.* para. 59.

¹²⁴ Appellate Body Report, *EC and Certain Member States - Large Civil Aircraft*, para. 967.

¹²⁵ Appellate Body Report, *US - Large Civil Aircraft (Second Complaint)*, para. 624.

¹²⁶ A distinction could be made between the allocation of rights that are tradable and rights that are not, but defining non-tradable rights as non-subsidies could lead governments to employ such allocations as a way of advantaging certain enterprises (Hufbauer & Kim 2010, p. 28).

¹²⁷ The WTO Secretariat has termed a feed-in tariff as a "regulated minimum price" (World Trade Organization 2011, p. 11).

supports are sure to resurface. When environmental policymakers seek to set minimum prices¹²⁸ in order to render a new technology more competitive, such measures may come under the supervision of the SCM Agreement through the back-door of "income or price support" (Bigdeli 2009, pp. 169–71).¹²⁹ So if a government measure guaranteed future income or pricing, this could provide an SCM cause of action without there being a financial contribution.

Many legal uncertainties exist in ascertaining when a financial contribution confers a "benefit" under SCM. In the *Canada - Renewable Energy/ Feed-in Tariff* case, although the Appellate Body used the SCM Article 14 benchmarks to analyze the benefit of the FIT contracts, the appellators emphasized that these benchmarks provide only "one way" to ascertain benefit.¹³⁰ So the Article 14 benchmarks may not fully describe the ways that a measure can benefit recipients. Under Article 14, the governmental provision of goods and services constitutes a benefit if done for less than adequate remuneration. Article 14 further explains that "The adequacy of remuneration shall be determined in relation to prevailing market conditions for the good or service in question in the country of provision or purchase (including price, quality, availability, marketability, transportation and other conditions of purchase or sale)."¹³¹ Especially when state-owned enterprises are prevalent in any economy, many sales of goods and services can come under review for rendering a benefit. In the future, WTO case law will need to address difficult questions such as when a panel can look at markets beyond the country of provision.¹³²

Another interpretive issue will be how to value "conditions of purchase or sale" in SCM Article 14(d) where the recipient of an energy good or service agrees to behave in an environmentally friendly way. For example, suppose a government sells a widget to an enterprise for cash that would be less than adequate remuneration in isolation, but the sales contract also requires conditions whereby the enterprise agrees to perform certain acts of value to the government. Likewise, suppose a government purchases a widget with more than adequate remuneration linked to onerous conditions. In such scenarios, how should remuneration be quantified?

In the *Canada – Renewable Energy/ Feed-in Tariff* case, the Appellate Body grappled with the question of whether the purchase of renewable energy at generous contract prices constitutes a benefit. Because the evidence had not been sufficiently developed by the panel, the Appellate Body did not reach a conclusion. But the Appellate Body provides some clarification for how FIT contracts should be evaluated by a panel in the future. Rather than considering the market for electricity as a whole, the panel should have examined the market for wind and solar generated electricity.¹³³ In doing so, the pivotal question is whether the administered prices provide more than adequate remuneration and

¹²⁸ In its report, the Appellate Body posited that "higher prices for renewable electricity have certain positive externalities, such as guaranteeing long-term supply and addressing environmental concerns..." Appellate Body Report, *Canada – Renewable Energy/ Feed-in Tariff*, para. 5.189.

¹²⁹ Such a cause of action may also require a showing of an export enhancement effect as per GATT Article XVI:1.

¹³⁰ Appellate Body Report, *Canada – Renewable Energy/ Feed-in Tariff*, para. 5.162.

¹³¹ SCM Art. 14(d).

¹³² In *Canada - FIT*, the Appellate Body confirmed that a panel can look at out-of-country benchmarks when prices in the country of provision are distorted because of the government's predominant role in providing the goods. Appellate Body Report, *Canada – Renewable Energy/ Feed-in Tariff*, para. 5.226.

¹³³ This suggests that the product at issue is electricity made from renewable resources. Thus, if Canada were exporting that electricity to New York, the relevant industry in the United States for injury to the like product would be producers of US electricity from renewable sources. So far in the WTO, there have not been any disputes regarding trade in electricity. Another implication of the Appellate Body's analysis is that electricity from renewable sources will no longer be considered a "like product" to electricity from fossil fuel. Such an interpretation would go against the conventional wisdom that "there is no question that electricity produced from nonrenewable energy sources is 'like' electricity produced from renewable sources, because the only difference between the two types of electricity is the method by which the electricity is produced" (Wold, Wilson & Foroshani 2012, p. 683).

whether the electricity suppliers would have entered the market absent the FIT program.¹³⁴ The Appellate Body suggested that the government using the FIT contract needs to have a methodology for "market-based price discovery" in order to set a SCM-valid price for electricity.¹³⁵ This methodology could be competitive bidding, but does not have to be.

In summary, although the *Canada – Renewable Energy/ Feed-in Tariff* case clarified some legal points, the setting of FIT contract prices is still in the grey area of SCM law.¹³⁶ This legal uncertainty is significant because FITs are in use throughout the world economy. If a government writes FIT contracts using an-above market price, then such a payment could be a subsidy that could potentially cause adverse effects to foreign exporters of renewable electricity.¹³⁷

The question of when a government loan gives a benefit also is not straightforward. Under Article 14, the test is whether there is a difference between the amount that the firm receiving the loan pays on the loan and the amount the firm would pay on a comparable commercial loan obtained in the market. Yet how to apply this to so-called Green Banks is not clear. On the one hand, the *raison d'être* of a Green Bank is that investments would not be made "but for" the availability of the Bank. Nevertheless, as shown in *Canada – Renewable Energy/ Feed-in Tariff*, the Appellate Body might not apply a simple, "but-for" test that does not take into account the adequacy of the relevant market. So a governmental Green Bank planning a lending program may not know what loan rates and terms can avoid a finding of a benefit.

The fact that Article 8 changed the status of subsidies to promote adaptation of existing facilities to new environmental requirements sheds light on the question of whether such assistance provides a "benefit." Although some commentators (for example, Howse 2009, p. 88) have suggested that reimbursing an enterprise for an action that it would not otherwise take does not necessarily confer a benefit, no textual support exists for this notion in how the SCM Agreement defines a subsidy (Bigdeli 2009, p. 163; Hufbauer, Charnovitz & Kim 2009, pp. 63–64). Indeed, if paying the polluter for its regulatory costs could not lead to a benefit under the SCM Agreement, then there would have been no need for the adaptation exemption in SCM Article 8.

The scope for strategies to extinguish benefits also remains amorphous. Suppose WTO Member A gives a subsidy to an electric car producer and then creates conditions to enable the producer to pay back the subsidy (*Wall Street Journal* 2013a, p. A12). Is the benefit fully negated for purposes of SCM Article 1?¹³⁸ This is an important issue for green subsidies because governments can easily use technical regulations, procurement, or public appeals to boost sales for the favored producer, and can give consumers incentives to buy the subsidized product. In summary, the discussion above shows considerable legal uncertainty regarding when a subsidy-like green measure qualifies as a subsidy under SCM Article 1.

When subsidies do exist, specificity will be a threshold issue. Subsidies can be *de jure* specific, *de jure* non-specific, or *de facto* specific. SCM Article 2.1(c) provides:

If, notwithstanding any appearance of non-specificity resulting from the application of the principles laid down in subparagraphs (a) and (b), there are reasons to believe that the subsidy may in fact be specific, other factors may be considered. Such factors are: use of a subsidy programme by a limited number of certain enterprises, predominant use by certain enterprises, the granting of disproportionately large amounts of subsidy to certain enterprises, and the manner in which

¹³⁴ Appellate Body Report, *Canada – Renewable Energy/ Feed-in Tariff*, paras. 5.199, 5.228.

¹³⁵ *Id.*, para. 5.233.

¹³⁶ Although a feed-in-tariff itself is often referred to as a "subsidy" because the price paid is much higher than the market price for electricity (see, e.g., Nordhaus & Shellenberger 2013, p. A15), the Appellate Body clarified that the higher price in itself does not turn that measure into an SCM subsidy.

¹³⁷ Or if all electricity is a "like" product, then the measure could cause an adverse effect on foreign electricity exporters.

¹³⁸ In my view, the Appellate Body has eroded the SCM disciplines and the subsidy should not be negated.

discretion has been exercised by the granting authority in the decision to grant a subsidy. In applying this subparagraph, account shall be taken of the extent of diversification of economic activities within the jurisdiction of the granting authority, as well as of the length of time during which the subsidy programme has been in operation.¹³⁹

As there is only a small amount of case law on this provision, a government contemplating a green subsidy may be uncertain as to whether such a subsidy would be ruled as specific, especially as de facto specific (Rubini 2012, p. 549). But because many green subsidies seek to promote specific technologies and incentivize particular industries, such subsidies, if challenged, are likely to be found specific (Selivanova 2007, p. 28; Horlick 2009, p. 194). Even a worker training subsidy aimed at emerging industries (U.S. Government Accountability Office 2013) could be specific.

If SCM Article 8 were still in force, some of its carve-outs might be mint space, but with the expiration of Article 8, they are all gray space contingent on economic effects. Yet even though Article 8 is technically defunct, there is still a question of whether some of its principles might have survived. The best example may be Footnote 26 which states:

The provisions of this Agreement do not apply to fundamental research activities independently conducted by higher education or research establishments. The term "fundamental research" means an enlargement of general scientific and technical knowledge not linked to industrial or commercial objectives.

Despite its expiration, this provision could still provide context for the interpretation of SCM Articles 1 and 2.¹⁴⁰ Nevertheless, the absence of a clear immunity can lead a WTO Member to wonder whether a grant for fundamental clean energy research will be determined to be an actionable subsidy. Moreover, as Daniel Peat has noted, in the green energy technology market "activities that were previously considered to be 'fundamental research activities' are now intimately bound to commercial exploitation, and are hence all potentially trade-distorting" (Peat 2012, p. 8).

Ostensibly, a grey environmental subsidy causing adverse effects should be found to be a violation of the SCM Agreement. Nevertheless, WTO jurists may also consider the spirit of the law in maintaining policy space for domestic authorities. In its jurisprudence under the General Exceptions of GATT Article XX, the Appellate Body has preserved space for environmental regulations and import bans. In its jurisprudence under the Agreement on Technical Barriers to Trade (TBT), based to a large extent on the TBT Preamble, the Appellate Body has preserved space for regulations whose "detrimental impact on imports ... stems exclusively from a legitimate regulatory distinction."¹⁴¹ The SCM Agreement lacks both General Exceptions and a Preamble and so finding policy space in the Agreement will be harder. Nevertheless, in a high profile environmental dispute, one can easily imagine the Appellate Body using the WTO Preamble or public international law to interpret the SCM Agreement in an environmentally friendly way.¹⁴²

The grey space also includes measures whose legality depends on how one government's subsidy affects the trading interests of other WTO Members. Any specific domestic subsidy has the potential to cause injury to *import*-competing interests in other countries or to cause serious prejudice to *export*-competing interests in other countries. If such economic effects are found to occur, the subsidy is

¹³⁹ SCM 2.1(c) (internal footnotes omitted).

¹⁴⁰ The continuing relevance of Part IV was noted by the *U.S. – Cotton* panel which stated that even after expiration, Articles 8 and 9 of the SCM Agreement "can nevertheless be instructive in understanding the overall architecture with respect to the different types of subsidies it sought and seeks to address." WTO Panel Report, *U.S. – Upland Cotton*, para. 7.907 n. 1086.

¹⁴¹ Appellate Body Report, *United States - Measures Affecting the Production and Sale of Clove Cigarettes*, WT/DS406/AB/R, adopted 24 April 2012, para. 181.

¹⁴² Note, however, that the Appellate Body has held that "introducing legitimate policy considerations into the determination of benefit cannot be reconciled with Article 1.1(b) of the SCM Agreement [the requirement to confer a benefit]." Appellate Body Report, *Canada – Renewable Energy/ Feed-in Tariff*, para. 5.185.

illegal under SCM Article 5. Thus, any specific green subsidy can potentially violate the WTO and, if so, would be in the Red space. Of course, production subsidies are far more likely to cause transborder adverse effects than are consumption subsidies. Indeed, the WTO Secretariat has opined that "Unlike support linked to production, government support for consumption will not affect international trade provided that it does not distinguish between domestic and imported goods or services" (World Trade Organization 2011, p. 11).

Finally, one should note that SCM Article 5(c) is a nearly unique provision in WTO law because it preconditions the legality of a subsidy upon its ex post market effects on other countries.¹⁴³ Typically in WTO law, the design of a measure dictates its legality or illegality (e.g., a discriminatory measure, an export subsidy or a quantitative restriction), and thus the legal status of a measure can be known at enactment. Moreover, while there are some WTO provisions that require the use of a less trade restrictive alternative,¹⁴⁴ their implementation does not generally require analysis of economic effects in other countries. So the "serious prejudice" subsidies are especially troublesome because their legal status will be unknowable ex ante.

How Unilateral CVDs Constrain Policy Space

Besides rendering certain subsidies WTO-illegal, trade rules shape policy space in making available countervailing duties. Although a CVD is a unilateral response to a foreign government subsidy, the impact of the CVD is not on the foreign government directly, but rather on foreign exporters, domestic importers, and domestic consumers. Of course, as noted above, when an import is countervailable, the subsidy at issue will also be SCM-illegal. So if Government S uses a subsidy and Government T responds with a CVD, then whatever policy space T's CVD takes away from S will be space that was already eroded by the underlying WTO-illegality of the subsidy.

But T's CVD not only affects S, it can also affect T. Recall that T's action to impose the CVD is dictated by WTO rules that give T's import-competing domestic industry the right to initiate an application for a CVD.¹⁴⁵ So Country T could lose the benefit of lower-cost, subsidized imports (such as solar panels) without T's trade authorities having assessed the environmental (or for that matter economic) impact of the CVD on its own consumers.

Summary of Section IV

To summarize, Section IV of the paper introduces a new tripartite categorization of green subsidies as being mint (legal), red (illegal), or grey (contingent legal status). Each category is discussed conceptually and then with reference to the panoply of green measures which fit that category. The red measures obviously encroach the policy space available to governments, but so do the gray measures because a government may not know ex ante whether its measure is a subsidy and, if so, whether it is SCM-illegal. CVDs are a self-help remedy for governments to respond to red measures without bringing a case to the WTO. In applying a CVD, a government encroaches on its own policy space by boosting the cost of imported products.

¹⁴³ The only other like provision is Annex 2 of the Agriculture Agreement which provides space for listed policy-specific subsidies provided that they "have no, or at most minimal, trade-distorting effects or effects on production."

¹⁴⁴ For example, Article 2.2 of the Agreement on Technical Barriers to Trade, Article 5.6 of the Agreement on the Application of Sanitary and Phytosanitary Measures, and GATT Article XX(b), (d).

¹⁴⁵ Technically, the SCM does not require B to impose the CVD, but many WTO Members have domestic legislation that limits discretion not to impose the CVD in qualifying circumstances.

V. How to Improve WTO Law Governing Green Subsidies

Having now examined green subsidies, their economic rationale, and the SCM rules governing them, this study, in Section V, considers how to optimize current law to supervise and, when appropriate, encourage green subsidies. Although any change in WTO law would be difficult to achieve, one should not start with an assumption that WTO law is immutable. Indeed, a controversial amendment to the WTO regarding public health has already been put into operation through a permanent waiver.

Altering trade rules to make them more compatible with shared environmental objectives would not call into question any fundamental principles of the trading system. After all, the Preamble to the WTO Agreement refers to "the objective of sustainable development," and WTO case law includes the holding that "sustainable development is one of the objectives of the WTO Agreement."¹⁴⁶ That judicial holding has been accepted by the WTO's leadership. Indeed, then WTO Director General Pascal Lamy heralded recently that "Sustainable development is at the heart of Rio + 20 and at the heart of the WTO" (Lamy 2012). In WTO secondary law, there has also been clear acknowledgement of the importance of sustainable development. For example, in 2001, the WTO Doha Ministerial Declaration declared that "We are convinced that the aims of upholding and safeguarding an open and non-discriminatory multilateral trading system, and acting for the protection of the environment and the promotion of sustainable development can and must be mutually supportive."¹⁴⁷

In pointing out how the SCM Agreement is not optimal for environmental policy, this study is not suggesting that the SCM Agreement is otherwise optimal. The squeezing of space for policy incentives can be a problem in other fields such as energy, medical devices, and transportation. Thus, the focus in this study on environment should not be taken as special pleading for environment. Many reforms of the SCM Agreement could be beneficial. Indeed, analysts have argued that the SCM Agreement does not achieve efficiency in international trade.¹⁴⁸

Given that SCM law is not optimal for the environment, then what are the options for reforming SCM? Should any of the red space become gray or mint? Should any of the gray space be clarified in order to reduce policy uncertainty and trade disputes? Answering questions such as these requires a framework for analysis.

Here the paper introduces such a framework, namely, to consider WTO norms in the context of the two other sources of authority discussed in this study, domestic policy space¹⁴⁹ and international environmental law. Domestic policy space includes the ability of governments to craft economic policies to respond to market failure. International environmental law includes both hard law and soft law.

Using this framework, one can compare the result from trade law to the result from international environmental law and domestic law. When all three norms point to the same conclusion, then there will not be any case for changing WTO law. When the other two norms point in a different direction than the WTO, there will be a good case for changing WTO law. When only one of the other two norms points to a different direction than WTO law, then there will be only a very weak case for changing WTO law.

¹⁴⁶ Panel Report, *United States - Import Prohibition of Certain Shrimp and Shrimp Products*, Recourse to Article 21.5 of the DSU by Malaysia, WT/DS58/RW, adopted with Appellate Body Report 21 Nov. 2001, para. 5.54.

¹⁴⁷ WTO Ministerial Declaration, 14 Nov. 2001, para. 6.

¹⁴⁸ Kyle Bagwell argues that the terms-of-trade theory of trade agreements suggests that the SCM Agreement's disciplines on both export subsidies and domestic subsidies "are too severe" (Bagwell 2008, p. 770). Rob Howse has also argued that current disciplines are too severe (Howse 2011).

¹⁴⁹ Since a WTO Member's domestic policy space is shaped, to some extent, by its WTO obligations, there is admittedly some circularity in suggesting that the two be considered independently of each other. So domestic space here means whether a measure would be rational for a government to do leaving aside its international obligations.

Table 7 below shows what support each of the three normative sources would give to WTO-illegal environmental subsidies:

Table 7: Support for Illegal Green Subsidies Within Three Normative Systems			
Type of Green Subsidy	Domestic Policy Space	WTO Law	International Environmental Law
Subsidy to domestic enterprises contingent on export	No	No	No
Subsidy to domestic enterprises contingent on local content requirement	Yes	No	No
Subsidy to domestic enterprises that export and thereby cause injury to industry in market of importing country	Yes	No	Some
Subsidy to domestic enterprises that export and thereby cause adverse effects to competing exporters seeking access to third country markets	Yes	No	Some
Subsidy to domestic enterprises that cause adverse effects to foreign exporters seeking access to market of subsidizing country	Yes	No	Yes

The Table provides a "Yes" when a norm supports the subsidy, a "No" when a subsidy contradicts a norm, and "Some" when there is ambiguity. Note that the same government subsidy could have multiple effects identified in successive rows in Table 7, especially the last three rows.

The judgments embodied in the Table can be summarized as follows: By definition, each of the subsidies gets a "No" for WTO Law because each violates WTO rules. Almost all of the subsidies are supported by a domestic law right to subsidize. The export subsidy gets a "No" because such a measure is not a domestic policy. In other words, the right to subsidize production (even when that production is exported) does not go so far as to give a right to explicitly subsidize *exportation*. In general, international environmental law does not prescribe green subsidies. But one can tease out some support for temporary subsidies from the OECD Recommendation on the Implementation of the PPP. Therefore, a domestic subsidy to enterprises that export gets a "Some." By contrast, a domestic subsidy that is *not* embedded in an export merits a "Yes" because such a passive measure is not inherently distorting, protectionist or discriminatory. Because international environmental law specifically warns against measures that distort trade, the pure export subsidy and the LCR subsidy both get a "No."

The key findings in Table 7 regarding red space are as follows: First, no support exists for reconsidering the SCM rule (Art. 3.1(a)) prohibiting export subsidies. Second, there is a very weak case for reconsidering the SCM rule (Art. 3.1(b)) on subsidies contingent on LCRs. Third, there is a weak case for reconsidering SCM rules governing subsidies to domestic enterprises that export and thereby cause injury to a second country market (Art. 5(a)) or cause adverse effects in third country markets (Art. 6.3(b), (c), (d)). Fourth, there is a good case for reconsidering the SCM rule (Art. 6.3(a)) governing a subsidy to domestic enterprises that causes adverse effects to foreign exporters seeking access to the market of a subsidizing country.

Export Subsidies

The illegal status of green export subsidies could be challenged on the argument that such subsidies should instead be encouraged because they confer environmental benefits to other countries.¹⁵⁰ Given such benefits, Aaditya Mattoo and Arvind Subramanian recently proposed that export subsidies not be prohibited under SCM, but rather "be made actionable" (Mattoo and Subramanian 2013, p. 3). Of course, as discussed above, export subsidies are already actionable and will be illegal if they have the requisite effects.

In my view, no case exists for removing the prohibition against export subsidies. Even if an export subsidy were definable as domestic policy, such a subsidy would not qualify as an economically justified. Consider whether all countries could make themselves better off by competing in export subsidies. Obviously such race-to-the-bottom subsidy wars would be feckless (Sykes 2005, p. 91). While an export subsidy on green products could logically be viewed as technology transfer (or development assistance) consonant with international environmental objectives, the rules of international environmental law specifically warn against creating trade distortions. Moreover, no MEA treats an export subsidy as an environmental measure. So if the environmental regime refuses to acknowledge the value of an export subsidy,¹⁵¹ why should the trade regime do so?

Although even SCM Article 8 as enacted continued to prohibit export subsidies, there are pragmatic alternatives to the blanket prohibition of export subsidies in Article 3.2. One would be to permit an export subsidy if the exporting country commits to cap its export price for a lengthy period so as to avoid predatory pricing.¹⁵² Another option is that per se illegality could be overcome when an importing country opted to accept such subsidized green imports. Note that under SCM Article 3, an importing country could eventually lose the opportunity to import a subsidized green good if the WTO dispute system declares the export subsidy illegal. The receiving country cannot immunize the importation by not lodging a WTO complaint because any other WTO Member may do so.

For least-developed countries (LDCs), allowing benefits from importing export-subsidized goods could be accomplished by amending SCM Article 27.2 which permits LDCs to *use* export subsidies. Clearly, this derogation is perverse as the typical LDC would hardly have surplus tax dollars for granting export subsidies. Instead, Article 27.2 should permit LDCs to *accept* subsidized imports that would otherwise not be allowed by SCM Articles 3-5. Indeed, this reform could cover all merit goods, not just green products.

¹⁵⁰ The counterargument is that since the WTO does not take into account the economic benefit of the export subsidy to the receiving country, why should the WTO take into account the environmental benefit?

¹⁵¹ For example, under UNFCCC Arts. 4.3 and 4.5, an export subsidy is not specifically mentioned as a financial resource or a transfer of environmentally sound technology. Nor does an export subsidy qualify for the Clean Development Mechanism or for credit under carbon market systems.

¹⁵² This would not be a commitment to export any particular volume, only that if the country exports it will not seek to raise prices after it has undermined unsubsidized foreign competitors.

LCR Subsidy

If there is a case for reconsidering the SCM rule against subsidies contingent on LCRs, the case would have to be that such a measure constitutes a best-practice domestic policy. But an LCR cannot possibly be a best practice because if all countries did it, then all would be worse off. With such a collective action dilemma, the ideal policy is cooperation by all players to agree *not* to engage in this counterproductive practice (which at its limits is autarky). Mattoo and Subramanian reach a similar conclusion in observing that LCR "subsidies do not have the environmental benefits of other subsidies because they merely induce the substitution of more costly domestic inputs for cheaper foreign alternatives, and therefore do not further--they may even hinder attaining--environmental objectives" (Mattoo and Subramanian 2013, pp. 3-4). Therefore, LCRs are a political economy failure, not a sustainable development solution.

Actionable Subsidies That Cause Adverse Effects

The case for legalizing actionable green subsidies needs to be carefully unpacked. Proponents of reform, such as Mattoo and Subramanian, have argued for WTO law changes such that "Specific green subsidies that are currently actionable would be permitted..." (Mattoo and Subramanian 2013, p. 3), but their study does not provide a detailed justification. In my view, across-the-board legalization is not the right approach for the reasons shown in Table 7. Instead, the analysis below illustrates several more nuanced options for softening SCM law against green actionable subsidies that cause adverse effects.

A key challenge for reform is how to identify the subsidies that are effective enough to warrant legalization. SCM Article 8 (Identification of Non-Actionable Subsidies) already defines certain environmental and research subsidies that are notionally non-actionable, and so the obvious question is whether reviving Article 8 in some form would be a logical next step. As noted in Table 5 above, reviving Article 8 would turn some red and grey measures to mint, such as subsidies for industrial research, pre-competitive development activity, and adaption of existing facilities to new environmental requirements. But a basic production subsidy, such as a FIT contract, would not meet the terms of Article 8. Nor would many of the other green subsidies listed in Table 1 such as tax credits to consumers or incentives for energy efficiency measures not required by regulation (Lee 2011, pp. 87–89). So a simple reinstatement of Article 8 would not be enough.

Instead, analysts have proposed tweaking a revived Article 8.¹⁵³ One possibility is to prepare a "Positive Illustrative List of Subsidies Helpful to the Environment" that could be incorporated by reference into a revised Article 8 or used in other SCM reforms.¹⁵⁴ There would be some heuristic benefit in preparing such a list which could then serve as a toolbox for national regulators.¹⁵⁵ Whether the WTO is a feasible institution to prepare such an Illustrative List is an apt question given how unsuccessful the WTO has been since 2001 in agreeing upon a list of environmental goods and services. Perhaps the WTO should outsource this task to the OECD.

If Article 8 is revived in some form, there is a question of what to do about CVDs. Under Article 8, if a measure is non-actionable, then not only is it rendered not illegal, but it is also rendered non-

¹⁵³ For proposals to revive Article 8 in some form, see Charnovitz 2003, p. 161; Luengo Hernández de Madrid 2007, p. 165; Hufbauer, Charnovitz & Kim 2009, p. 109; Bigdeli 2009, p. 190–92; Howse 2010, pp. 19–21; McIssac 2010, p. 1079; Bigdeli 2011; Cottier 2011, p. 233; Rubini 2012. For arguments against Article 8, see Sykes 2005, pp. 102–03.

¹⁵⁴ One reader for this paper asks whether the WTO would be going back in the wrong direction by establishing sector-specific rules for environmental and energy goods and services. My answer is that the WTO should respond to the realities of international life. Moreover, the trading system is hardly embarrassed by its derogations for agricultural trade.

¹⁵⁵ Drawing up such a List would require agreement on the conditions for subsidies and the goods and services covered. One challenge would how to address subsidies for intermediate goods that can be used for both environmental and non-environmental purposes.

countervailable. But the two statuses of countervailability and illegality do not have to be treated symmetrically. An alternative approach would be to provide that subsidies on the Positive Illustrative List would be deemed legal, but *would be* countervailable.¹⁵⁶

Still another option would be to retain the Article 8 approach, but instead to make substantive changes in applicable SCM provisions. As indicated in Table 7, SCM Article 6.3(a) is problematic because it could make illegal a green subsidy to domestic enterprises only because such subsidization impedes foreign exporters who want to sell into the market of the subsidizing country. For example, suppose Country A subsidizes the production of solar panels so that they can sell in A at a price of \$1 per peak watt. Under current SCM rules, if exporters in Country B cannot sell a like solar panel into A's market because B's price is \$1.50 per peak watt, then, because such exports may be impeded by the subsidy, B would have a proper claim that A's subsidy is WTO-illegal.¹⁵⁷ But should that be enough for the WTO to prevent A from using the solar subsidy? Arguably not so long as A does not use the subsidy to enhance its export competitiveness. So there is a good case for vitiating Article 6.3(a) in instances where Country A employs a subsidy on the Positive Illustrative List.

Table 7 also suggests that there is a weak case for reconsidering SCM rules governing green subsidies to domestic enterprises that export and thereby cause injury to a second country market. Given that such a green subsidy is currently countervailable, import competing countries would not lose much should the WTO eliminate the illegality in SCM Article 5(a). So this option could be a win-win for the environment and for trade by expanding market space and avoiding WTO litigation.¹⁵⁸

Table 7 also suggests that there is a weak case for reconsidering SCM rules governing green subsidies to domestic enterprises that cause adverse effects in third country markets (Art. 6.3(b), (c), (d)). Here an array of reasonable options exists, ranging from disallowing those causes of action for green subsidies on the Positive Illustrative List to maintaining the current disciplines.¹⁵⁹ In between de jure legality and illegality, there would be the possibility of analyzing the green subsidy being contested to ascertain whether the environmental benefits of the subsidy to all countries exceed the trade costs to all countries (Peat 2012, p. 6). Yet specifying an objective methodology would be difficult since it would require weighing trade against environmental effects and engaging in inter-country comparisons of utility. Another option, proposed by Gary Clyde Hufbauer, Steve Charnovitz, and Jisun Kim, would be to provide a safe harbor for an export that replaces a traditional energy source in an importing country emitting greater greenhouse gases per unit of energy (Hufbauer, Charnovitz & Kim 2009, p. 109).

A government found to be using an illegal domestic subsidy is faced with the choice of either withdrawing the subsidy or removing its adverse effect. One way to remove some adverse effects would be to cease exports of the subsidized good. This raises the question of whether there should be a categorical rule that governments should not permit the export of goods produced with green subsidies. In other words, the right to subsidize domestically could be upheld by eliminating the SCM Article 6.3(a) cause of action (as discussed above), with the understanding that while there is a right to subsidize, there is no right to export subsidized goods. The problem with this approach is that it overlooks the international benefit of promoting export of merit goods (such as renewable energy goods) even when such goods are subsidized in production.

¹⁵⁶ This would be similar to the WTO Agreement on Antidumping in that while dumping is not WTO-illegal, the importing country may utilize the remedy of an antidumping duty.

¹⁵⁷ Under the case law of SCM Article 32.1, B could not confidently use a countersubsidy.

¹⁵⁸ On the other hand, one could argue that relying upon CVDs puts undue stress on the importing country government which will then be criticized either by its consumer or producer interests. From this perspective, the subsidizing government that causes the destabilization should bear the burden of having to defend its subsidy at the WTO.

¹⁵⁹ Another set of options would differentiate among the instruments of subsidy. Current WTO rules treat all subsidy instruments the same, but there may be an argument, for example, for treating loan guarantees more favorably than loans and treating loans more favorably than grants.

Another in-between option would be to fully remove the illegality of exporting goods made with subsidies on the Positive Illustrative List, but only for countries in compliance with a commitment not to employ brown subsidies domestically. In other words, harness the regulatory power of the WTO in support of environmental objectives.¹⁶⁰ This option would require the construction of a new Negative Illustrative List of Subsidies Harmful to the Environment, such as subsidies for fossil fuel and or excessive use of water resources. Of course, some fossil fuel subsidies might not be harmful if they promote switching from coal to natural gas.

Finally, one other approach to providing more space for domestic subsidies should be noted, namely, allowing a GATT Article XX defense. This option has been put forward by several commentators (see Rubini 2012). With such a defense, a legitimate green subsidy would be permitted so long as it were not applied in a manner that would constitute arbitrary or unjustifiable discrimination between countries where the same conditions prevail.

In summary, Section V puts forward several ideas, some of them new, for how to widen the mint space for green subsidies. Table 8 recaps those proposals:

¹⁶⁰ One reviewer suggested another condition, namely that the exporting country government eliminate tariffs on environmental goods.

Table 8: Key Options for Relaxing SCM Law to Remove Illegality of Green Subsidies

Type of Green Subsidy	Should Current Law Be Relaxed?	Best Options for Amendment
Subsidy to domestic enterprises contingent on export	No	Permit export subsidy if exporting country commits to a maximum export price for a lengthy period of time Allow importing countries to opt in to receive goods benefiting from export subsidy
Subsidy to domestic enterprises contingent on domestic content requirements	No	None
Actionable subsidies generally	Depends- see below	If SCM is to be relaxed, do it in this way: Revive SCM Article 8 Revise Article 8 by adding a Positive Illustrative List of Subsidies Helpful to the Environment
Subsidy to domestic enterprises that cause adverse effects to foreign exporters seeking access to market of subsidizing country	Yes	Introduce a new carve out to SCM Art. 6.3(a) for subsidies on the Positive Illustrative List
Subsidy to domestic enterprises that export and thereby cause injury to industry in the market of importing country	Yes	Eliminate the SCM Art. 5(a) cause of action for subsidies on the Positive Illustrative List but keep countervailability
Subsidy to domestic enterprises that export and thereby cause adverse effects to competing exporters seeking access to third country markets	Weak case	If SCM is to be relaxed, do it in this way: Eliminate the SCM Art. 6.3(b), (c), (d) causes of action for subsidies on the Positive Illustrative List, but only for countries in compliance with a commitment not to use brown subsidies Provide a safe harbor for an export that replaces a traditional energy source in an importing country emitting greater greenhouse gasses per unit of energy than in the exporting country

Countervailing Duties

Under the now-expired SCM Article 8, CVDs were not available against qualifying environmental subsidies. Mattoo and Subramanian have likewise proposed that CVDs for climate-related production subsidies be disallowed (Mattoo and Subramanian 2013, p. 3 n. 4). As noted above, the advantage of such a proposal is that consumers in the importing country could maintain access to lower-cost

subsidized imports.¹⁶¹ The disadvantage of dropping CVDs is that this would make it politically harder for WTO Members to create new mint space for green subsidies and would violate the mercantilist assumptions underlying the WTO. Recall that the CVD is not likely to dissuade a foreign government from granting a subsidy that causes injury (Posner & Sykes 2013, pp. 276–77); at most the CVD could dissuade exportation but then only many months (or years) after the imports have caused the injury.

Instead of disallowing CVDs, the WTO should improve the choice architecture of governments in adjudicating an applicant's eligibility for a CVD. Several good options exist: First, the SCM should give a nudge to the WTO Member to consider domestic consumer and environmental interests. Specifically, SCM Article 19.2 should be amended to require governments to invite comments from environmental and consumer groups whenever a CVD is sought against a green subsidy.¹⁶² Similar to the existing provision¹⁶³ for public comment in the WTO Agreement on Safeguards, interested parties should be given the opportunity to submit views on whether an imposition of a CVD "would be in the public interest." Second, a company should be ineligible to seek a CVD for a specific product if it is enjoying a direct domestic subsidy for the like product. For example, a solar panel manufacturer benefiting from a homeland green subsidy should not be able to seek a CVD against imported solar panels enjoying the same kind of foreign subsidy. Third, reform is needed in the current process of SCM "Undertakings" (Article 18) in which importing country trade officials negotiate with foreign exporters to raise prices.¹⁶⁴ Such price increases of green imports are not in the consumer interest. Instead, the WTO's SCM Committee should encourage the subsidizing government to obviate the CVD by providing economic adjustment aid to the foreign import-competing industry.¹⁶⁵ Fourth, as Mark Wu and Jim Salzman have proposed, CVDs against environmental goods could be limited to three years (Wu & Salzman 2013, pp. 52–53). Fifth, as Wu and Salzman have proposed, the SCM Agreement could be amended to require that CVD-imposing governments devote a portion of the tariff income to compensating consumers of the countervailed product (Wu & Salzman 2013, p. 51–52).

VI. Conclusion

In fall 2013, many governments are granting green subsidies, and this has led to antipodal concerns that WTO law is impeding legitimate subsidies and that WTO law is not doing enough to discourage such subsidies when they cause trade tensions. Economic theory points to valid reasons why a government should sometimes use green subsidies, but also shows that many popular subsidies are not first-best instruments. Governments advocating and using green subsidies may also be employing brown subsidies that are wasteful and counterproductive.

Because WTO subsidy law does not take into account the purpose of a subsidy, many green subsidies can run into conflict with trade law. Governments concerned about acting within the bounds of the SCM Agreement may hesitate to use innovative subsidies that are contrary to current trade law or that have an uncertain legal status. At present, the WTO does not have a role overseeing the use of

¹⁶¹ To be sure, even without CVDs, the importing country government could deny its own consumers access to the imported green goods by imposing a high antidumping duty. Such antidumping duties are in common use today against solar panels (Kirwin 2013a, p. A-3). Because antidumping duties are triggered by an exporter's behavior rather than a government subsidy, such antidumping duties are outside the scope of this study.

¹⁶² Because a CVD would normally not improve the economic welfare of the importing country, it would be illogical to ask CVD decisionmakers to weigh the economic benefits of imposing the CVD versus the environmental losses from imposing the CVD.

¹⁶³ Agreement on Safeguards, Art. 3.1.

¹⁶⁴ Bradsher 2013, p. B1; *Wall Street Journal* 2013b, p. A12.

¹⁶⁵ Such a solution would be consistent with SCM Article 18.1(a). A subsidy to foreign producers is hardly inconceivable. In the U.S. - *Cotton* case, the United States provided a compensating subsidy to the Brazilian industry rather than fully withdrawing the U.S. subsidy (Grunwald 2010). The illegal cotton subsidies at issue include both prohibited and actionable subsidies.

subsidies that are legal under WTO law. Governments would probably be opposed to such policy scrutiny, but a reformed WTO SCM Committee could potentially undertake broader subsidy policy reviews.

A key advance in this study is to map the policy space for environmental subsidies in three colors: mint (permitted), red (disallowed), and grey (contingent status). This new map could help governments and stakeholders better understand the legal terrain for using environmental subsidies. WTO rules seek to prevent the red subsidies which are by design discriminatory or trade distorting. The grey area is probably the largest in terms of the variety of subsidies and subsidy expenditure. WTO rules seek to prevent grey area subsidies when they cause adverse effects. To avoid a violation of WTO rules, governments can craft subsidies in a way so as to minimize the likely trade distortions.

Trade disputes may arise when a foreign subsidy appears to cause an adverse effect or even when two countries provide different levels of subsidy to the same sector or technology. At the multilateral level, a trade dispute may lead to a WTO recommendation that a green subsidy be withdrawn. Unnecessary trade disputes over renewable energy should be avoided because such disputes may chill environmental regulation and trade cooperation (Ghosh & Meléndez-Ortiz 2013).

This study considers potential reforms to WTO law to permit well-designed green subsidies. Based on a three-part framework of domestic law, international environmental law, and world trade law, the study makes a case for relaxing the prohibition against domestic-content subsidies. By contrast, the same framework shows a stronger case for relaxing WTO rules on green subsidies that adversely affect the interests of other WTO members. Section V puts forward several options for how WTO law could be improved. In addition, the disciplines for countervailing duties could be modernized by requiring governments to consider the domestic consumer interest before imposing countervailing duties on green imports such as solar panels.

The WTO has espoused a commitment to sustainable development and therefore member governments and civil society need to periodically re-evaluate whether SCM rules are optimal for achieving the dual goals of environmental protection and open trade. This study finds that current rules are not optimal. The study also finds that for some clean energy subsidies, a government will not know in advance whether the subsidy is WTO-legal. Unfortunately, the reform of WTO rules for green subsidies is not currently on the negotiating table at the WTO.

Glossary of Key Terms

Subsidy. In the WTO, a subsidy is a financial contribution by a government or public body that confers a benefit to a recipient.

Specificity. Limiting a subsidy to certain enterprises. Specificity can be de jure or de facto. Only specific subsidies are actionable; generally available subsidies are not actionable. The narrower the list of beneficiaries, the more likely a subsidy is specific.

Actionable subsidy. A subsidy that can be challenged in the WTO dispute settlement system or investigated in a national authority for the purpose of levying a countervailing duty.

Non-actionable subsidy. A subsidy described in Article 8 of the SCM Agreement that was notionally exempt from being actionable. The category of non-actionable subsidies expired at the end of 1999.

Prohibited subsidy. A subsidy that is either: (1) contingent upon export performance, (2) an export subsidy under Annex I of the SCM Agreement (Illustrative List of Export Subsidies), or (3) contingent upon the use of domestic over imported goods.

References

- Bacchus, James. 2012. "The Case for Clean Subsidies." HBR Blog Network, 13 Nov. 2012.
- Bagwell, Kyle. 2008. "Remedies in the World Trade Organization: An Economic Perspective," in *The WTO: Governance, Dispute Settlement & Developing Countries* (Merit Janow, Victoria Donaldson & Alan Yanovich eds., 2008).
- Bahar, Heymi, Jagoda Egeland & Ronald Steenblik. 2013. "Domestic Incentive Measures for Renewable Energy with Possible Trade Implications," OECD Trade and Environment Paper 2013/01 OECD Publishing, Paris. doi: 10.1787/5k44srkrsr6f-en.
- Bankes, Nigel, Anatole Boute, Steve Charnovitz, Shi-Ling Hsu, Sarah McCalla, Nicholas Rivers & Liz Whitsitt. 2013. "International Trade and Investment Law and Carbon Management Technologies," 53(2) *Natural Resources Journal*, Summer 2013, at 285.
- Benitah, Marc. 2001. *The Law of Subsidies under the GATT/WTO System*.
- Berlin, Ken. 2012. "The Case for a Green Bank," Forbes Online, 11 January, <http://www.forbes.com/sites/williampentland/2012/01/11/the-case-for-a-green-bank/>.
- Bigdeli, Sadeq Z. 2009. "Incentive schemes to promote renewables and the WTO law of subsidies," in *International Trade and the Mitigation of Climate Change* (Thomas Cottier, Olga Nartova & Sadeq Z. Bigdeli eds. 2009).
- Bigdeli, Sadeq Z. 2011. "Resurrecting the Dead? The Expired Non-Actionable Subsidies and the Lingering Question of 'Green Space'", 8 *Manchester Journal of International Economic Law* at 2.
- Bradsher, Keith. 2013. "U.S. and Europe Prepare to Settle Chinese Solar Panel Cases," *New York Times*, 21 May.
- Brat, Ilan & Christopher Bjork. 2013. "Spain Poised to Cut Subsidies on Renewables," *Wall Street Journal*, 8–9 June.
- Brevetti, Rossella. 2013. "Sen. Wyden Floats Idea of Global Resolution of Green Trade Spats," *Bloomberg BNA Daily Report for Executives*, 21 March, at A-32.
- Carroll, Peter & Aynsley Kellow. 2011. *The OECD: A Study of Organisational Adaptation*.
- Charnovitz, Steve. 2003. "Trade and Climate: Potential Conflicts and Synergies," in Pew Center on Global Climate Change, *Beyond Kyoto: Advancing the International Effort Against Climate Change* at 141.
- Charnovitz, Steve. 2010. "Reviewing Carbon Charges and Free Allowances under Environmental Law and Principles," 16(2) *ILSA Journal of International and Comparative Law* at 395.
- Cohen, Stephanie. 2013. "China-U.S. Solar Dispute Unmoved by Industry Group's Proposed Settlement," *Bloomberg BNA Daily Report for Executives*, 26 September, at A-40.
- Collins-Williams, Terry and Gerry Salembier. 1996. "International Disciplines of Subsidies: The GATT, the WTO and the Future Agenda," 30(1) *Journal of World Trade*, at 5.
- Condon, Bradley J. 2009. "Climate Change and Unresolved Issues in WTO Law," 12 *Journal of International Economic Law* at 895.
- Constable, John. 2013, "Subsidies for renewables hold back green economy," Public Service Europe, 17 May, available at <http://www.publicserviceeurope.com/article/3481/subsidies-for-renewables-hold-back-green-economy>.

- Cosbey, Aaron. 2011. "Renewable energy subsidies and the WTO: The wrong law and the wrong venue," IISD.
- Cottier, Thomas, Olga Nartova & Sadeq Z. Bigdeli (eds). 2009. *International Trade and the Mitigation of Climate Change*.
- Cottier, Thomas. 2011. "Energy in WTO Law and Policy," in *The Prospects of International Trade Regulation* (Thomas Cottier & Panagiotis Delimatsis eds.) at 211.
- Cromulent Economics Blog. 2013. Econ 101: Green Subsidies.
- Esty, Daniel C. & Steve Charnovitz. 2012a. "Green Rules to Drive Innovation," *Harvard Business Review*, March.
- Esty, Daniel C. & Steve Charnovitz. 2012b. "How the United States Can Improve Energy and Climate Policies," *World Financial Review*, available at <http://www.worldfinancialreview.com/?p=2011>.
- Evenett, Simon J. 2013. *Protectionism's quiet return: The GTA's pre-G8 summit report*, June, available at http://www.globaltradealert.org/12th_GTA_Report.
- Farah, Paolo D. & Elena Cima. 2013. "Energy Trade and the WTO: Implications for Renewable Energy and the OPEC Cartel," 16(3), *Journal of International Economic Law* at 707.
- Fatouros, A. 2007. "An International Legal Framework for Energy," 332 *Recueil Des Cours* at 355.
- G8 Camp David Declaration. 2012. 19 May.
- G20 Leaders Declaration. 2012. 19 June.
- Gaines, Sanford E. 1991. "The Polluter-Pays Principle: From Economic Equity to Environmental Ethos," 26(3) *Texas International Law Journal*, at 463.
- Galston, William A. 2013. "Government Is a Good Venture Capitalist," *Wall Street Journal*, 28 August 2013, at A13.
- Garman, David & Samuel Thernstrom. 2013. "Europe's Renewables Romance Fades," *Wall Street Journal*, 30 July.
- Gauthier, Gilles (with Erin O'Brien and Susan Spencer). 2000. "Déjà Vu, or New Beginning for Safeguards and Subsidies Rules in Services Trade?", in Pierre Sauvé & Robert M. Stern eds., *GATS 2000. New Directions in Services Trade Liberalization* at 165.
- Ghosh, Arunabha (with Himani Gangania). 2012. "Governing Clean Energy Subsidies: What, Why and How Legal?", ICTSD, August.
- Ghosh, Arunabha & Ricardo Mélenlez-Ortiz. 2013. "Want clean energy? Avoid trade disputes," *Business Standard*, 15 April.
- Gonzalez, Ángel. 2013. "Almost-Free Gas Comes at a High Cost," *Wall Street Journal*, 12 Apr. at A1.
- Goode, Walter. 2007. *Dictionary of Trade Policy Terms* (WTO and Cambridge University Press), 5th ed.
- Green, Andrew. 2006. "Trade rules and climate change subsidies," 5 *World Trade Review*, November, at 377.
- Grunwald, Michael. 2010. "Why the U.S. Is Also Giving Brazilian Farm Subsidies," *Time*, 9 April, <http://www.time.com/time/nation/article/0,8599,1978963,00.html>.
- Horlick, Gary N. 2009. "The WTO and climate change 'incentives'", in *International Trade and the Mitigation of Climate Change* (Thomas Cottier, Olga Nartova & Sadeq Z. Bigdeli eds.).

- Howse, Robert & Antonia L. Eliason. 2009. "Domestic and international strategies to address climate change: an overview of the WTO legal issues," in *International Trade and the Mitigation of Climate Change* (Thomas Cottier, Olga Nartova & Sadeq Z. Bigdeli eds).
- Howse, Robert. 2010. "Climate Mitigation Subsidies and the WTO Legal Framework: A Policy Analysis," IISD, May.
- Howse, Robert. 2011. "Do the World Trade Organization Disciplines on Domestic Subsidies Make Sense? The Case for Legalizing Some Subsidies," in *Law and Economics of Contingent Protection in International Trade* (Kyle W. Bagwell, George A. Bermann & Petros C. Mavroidis eds.).
- Hufbauer, Gary C., Steve Charnovitz & Jisun Kim. 2009. *Global Warming and the World Trading System*.
- Hufbauer, Gary C. & Jisun Kim. 2010. "Climate Change and Trade: Searching for ways to avoid a trade wreck," Graduate Institute, June.
- Hufbauer, Gary Clyde, Jeffrey J. Schott, Martin Vieiro & Erika Wada. 2013. *Local Content Requirements: A Global Problem*, September.
- International Energy Agency. 2009. "Ensuring Green Growth in a Time of Economic Crisis: The Role of Energy Technology."
- Janow, Merit E. & Robert W. Staiger. 2003. "The Treatment of Export Restraints as Subsidies under the Subsidies Agreement of the WTO," American Law Institute, available at <http://www.ali.org/doc/wto/wto2001/exportrestraints.pdf>.
- Jenevein, Patrick. 2013. "Wind-Power Subsidies?: No Thanks", *Wall Street Journal*, 2 April, at A13.
- Johnson, Jenny. 2013. "Renewable Energy Local Content Rules Proliferate, Spurring Calls for Trade Reform," *Bloomberg BNA Daily Report for Executives*, 31 July at C-1.
- Johnson, Keith and Cassandra Sweet. 2013. "Solar-Trade Fight Flares Up," *Wall Street Journal*, 21 March, at B1.
- Kirgis Jr., Frederic L. 1972. "Effective Pollution Control in Industrialized Countries: International Economic Disincentives, Policy Responses, and the GATT," *70 Michigan Law Review* at 859.
- Kirwin, Joe. 2013a. "EU Approves Antidumping Duties on Chinese Solar Panel Imports," *Bloomberg BNA Daily Report for Executives*, 9 May, at A-3.
- Kirwin, Joe. 2013b. "EU Energy Executives Blame High Prices on Wind, Solar Subsidies, Seek to End Them," *Bloomberg BNA Daily Report for Executives*, 15 October 2013, at A-3.
- Kuntze, Jan-Christoph & Tom Moerenhout. 2013. "Local Content Requirements and the Renewable Energy Industry - A Good Match?, ICTSD, June.
- La Chimia, Annamaria & Sue Arrowsmith. 2009. "Addressing Tied Aid: Towards a More Development-Oriented WTO?, *12 Journal of International Economic Law* at 707.
- Lamy, Pascal. 2012. "The WTO Path to Sustainable Development and the Green Economy," WTO, 20 June.
- Lee, Kenina. 2011. "An Inherent Conflict Between WTO Law and a Sustainable Future? Evaluating the Consistency of Canadian and Chinese Renewable Energy Policies with WTO Trade Law," *24 Georgetown International Environmental Law Review*, Fall at 57.
- Lehr, Jay. 2013. "The Rationale for Wind Power Won't Fly," *Wall Street Journal*, 18 June.
- Levi, Michael. 2013. "The Hidden Risks of Energy Innovation," *Issues in Science and Technology*, Winter.

- Levine, David & Pam Walther. 2013. "Wave of Trade Disputes Complicates Global Market for Renewable Energy Firms, Particularly Solar Sector," *Bloomberg BNA Daily Report for Executives*, 19 February.
- Lodefalk, Magnus & Mark Storey. 2005. "Climate Measures and WTO Rules on Subsidies," *Journal of World Trade* at 23.
- Lomborg, Bjorn. 2013. "Green Cars Have a Dirty Little Secret," *Wall Street Journal*, 11 May.
- Low, Patrick, Gabrielle Marceau & Julia Reinaud. 2012. "The Interface between the Trade and Climate Regimes: Scoping the Issues," 46 *Journal of World Trade* at 485.
- Luengo Hernández de Madrid, Gastavo E. 2007. *Regulation of Subsidies and State Aids in WTO and EC Law*.
- Matsushita, Mitsuo, Thomas J. Schoenbaum & Petros C. Mavroidis. 2006. *The World Trade Organization: Law, Practice, and Policy* (2nd ed.).
- Mattoo, Aaditya and Arvind Subramanian. 2013. "Four Changes to Trade Rules to Facilitate Climate Change Action," Peterson Institute Policy Brief, April.
- Maruyama, Warren H. 2011. "Climate Change the WTO: Cap and Trade versus Carbon Tax?," 45 *Journal of World Trade* at 679.
- McIssac, Christine. 2010. "Opening a GATE to Reduce Global Emissions: Getting over and into the WTO," 44(5) *Journal of World Trade* at 1053.
- Murphy, Colum. 2013. "BYD's Ticket: 'Made in U.S.'", *Wall Street Journal*, 29 April.
- Nordhaus, Ted & Michael Shellenberger. 2013. "Going Green? Then Go Nuclear," *Wall Street Journal*, 23 May.
- OECD. 1992, The Polluter-Pays Principle, GD(92)81.
- Pearson, Charles S. 1994. "Testing the System: GATT + PPP =?," 27 *Cornell International Law Journal* at 553.
- Peat, Daniel. 2012. "The wrong rules for the right energy: the WTO SCM Agreement and subsidies for renewable energy," 24 *Environmental Law and Management* at 3.
- Posner, Eric A. & Alan O. Sykes. 2013. *Economic Foundations of International Law*.
- Rio Declaration on Environment and Development. 1992.
- Rubini, Luca. 2012. "Ain't Wastin' Time No More: Subsidies for Renewable Energy, the SCM Agreement, Policy Space, and Law Reform," 15 *Journal of International Economic Law* at 525.
- Schweikart Jr., Larry & Burton W. Folsom Jr. 2013. "Obama's False History of Public Investment," *Wall Street Journal*, 6 Aug.
- Selivanova, Yulia. 2007. "The WTO and Energy: WTO Rules and Agreements of Relevance to the Energy Sector." ICTSD Issue Paper No. 1.
- Shultz, George P. and Gary S. Becker. 2013. "Why We Support a Revenue-Neutral Carbon Tax," *Wall Street Journal*, 8 April.
- Schwartz, Warren F. and Eugene W. Harper Jr. 1972. "The Regulation of Subsidies Affecting International Trade," 70 *Michigan Law Review*, at 831.
- Soprano, Roberto. 2010. "Doha Reform of WTO Export Credit Provisions in the SCM Agreement: The Perspective of Developing Countries," 44 *Journal of World Trade* at 611.

- Steenblik, Ron. 2013. "Subsidies in the Traditional Energy Sector," in *Global Challenges at the Intersection of Trade, Energy and the Environment* (Joost Pauwelyn ed.).
- Steger, Debra. P. 2010. "The Subsidies and Countervailing Measures Agreement: Ahead of its Time or Time for Reform?," 44 *Journal of World Trade* at 779.
- Sternberg, Joseph. 2013 "Don't Think of a Tiger" (review of *How Asia Works*), *Wall Street Journal*, 3 July.
- Stewart, Richard B. 2007. "Instrument Choice," in *The Oxford Handbook of International Environmental Law* (Daniel Bodansky, Jutta Brunée & Ellen Hey eds.).
- Stiglitz, Joseph E. 2006. "A New Agenda for Global Warming, *Economists' Voice*, July at 1.
- Strassel, Kimberley A. 2013. "Nearly Sideswiped by Another Green Car," *Wall Street Journal*, 26 April.
- Swedish National Board of Trade (Kommerskollegium). 2013. *Targeting the Environment: Exploring a New Trend in the EU's Trade Defence Investigations*.
- Sweet, Cassandra. 2012. "Solar Flare-Up: Tariffs Roil U.S. Firms," *Wall Street Journal*, 25–26 Aug.
- Sweet, Cassandra & Ryan Tracy. 2013. "Solar Installer Sues for Grant Funds," *Wall Street Journal*, 7 May.
- Sykes, Alan O. 2005. "Subsidies and Countervailing Measures," in *The World Trade Organization: Legal, Economic and Political Analysis* (Patrick F. J. Macrory, Arthur E. Appleton & Michael G. Plummer, eds.), Vol. II.
- Sykes, Alan O. 2010. "The Questionable Case for Subsidies Regulation: A Comparative Perspective," 2 *Journal of Legal Analysis*, Fall 2010, at 473.
- The Economist. 2013. "Bonfire of the subsidies," 6 April.
- Tracy, Ryan. 2013. "Green-Energy Mandates Find Improbable Allies," *Wall Street Journal*, 18 July.
- Ulbrich, Holley H. 2011. *Public Finance in Theory and Practice* (2nd ed.).
- UN Environment Programme. 2003. *Energy Subsidies: Lessons Learned in Assessing their Impact and Designing Policy Reforms*.
- UN Environment Programme. 2011. *Towards a Green Economy*.
- U.S. Government Accountability Office. 2013. *Labor's Green Jobs Efforts Highlight Challenges of Targeted Training Programs for Emerging Industries*.
- U.S. National Research Council. 2013. *Effects of U.S. Tax Policy on Greenhouse Gas Emissions*.
- Van den Bossche, Peter. 2008. *The Law and Policy of the World Trade Organization* (2nd ed).
- Wall Street Journal. 2013a. "The Other Government Motors," 24 May.
- Wall Street Journal. 2013b. "The Global Solar Cartel," 24 May.
- Wall Street Journal. 2013c. "Should the U.S. Finance Alternative-Energy Startups?," 22 September.
- Wall Street Journal. 2013d. "Energy Cronies, the Sequel," 26–27 October.
- Wold, Chris, Grant Wilson & Sara Foroshani. 2012. "Leveraging Climate Change Benefits through the World Trade Organization: Are Fossil Fuel Subsidies Actionable?," 43 *Georgetown Journal of International Law*, Spring, at 635.
- World Bank. 2012. *Inclusive Green Growth. The Pathway to Sustainable Development*.

- World Trade Organization. 2006. *World Trade Report 2006: Exploring the links between subsidies, trade and the WTO*.
- World Trade Organization. 2011. *Harnessing Trade for Sustainable Development and a Green Economy*.
- World Trade Organization. 2013. *World Trade Report 2013: Factors Shaping the future of world trade*.
- WTI Advisors. 2013. "Local Content Requirement & the Green Economy," June.
- Wu, Mark & James Salzman. 2013. "The Next Generation of Trade and Environment Conflicts: The Rise of Green Industrial Policy," April, Draft.

Author contacts:

Steve Charnovitz

George Washington University Law School

2000 H Street, N.W.

Washington, DC 20052

USA

Email: charnovitz@me.com